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INTRAMUSCULAR INJECTIONS OF ANTITOXIN IN THE TREATMENT OF DIPHTHERIA.

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HISTORICAL NOTE.

INTRAMUSCULAR injections of drugs were first employed about forty years ago, when it was found that deep injections of mercurial salts into the gluteal regions were less painful and less likely to give rise to abscesses than the subcutaneous method which had been recently introduced by Scarenzio in the treatment of syphilis. Other drugs, such as digitalis, camphor and quinine, were subsequently given intramuscularly for the same reasons. It was not, however, until intramuscular injections had been in use for nearly thirty years that Meltzer and Auer (17), of the Rockefeller Institute, New York, by experiments on rabbits and guinea-pigs with curare, fluorescein, morphine and adrenalin, showed that intramuscular injections were more rapidly absorbed than subcutaneous. Hitherto it had been supposed that absorption from muscles was slower than from subcutaneous tissue, owing to the comparative scarcity of lymphatics in the muscles. Subsequently physiologists proved that absorption of

fluid occurred primarily through the wall of the blood-capillaries, and only exceptionally through the lymphatics.

Meltzer and Auer suggested that the more rapid absorption from muscles was due to the unit of space in muscles containing more blood and more blood-vessels, and, therefore, taking up more liquid injected into it in a unit of time.

Further experiments by the same writers (18), published six years later, disproved the objection that the more rapid absorption was due to the needle having entered into the lumen of a vein.

The credit for the first experimental work on the comparative absorption of diphtheria antitoxin by intravenous, intramuscular and subcutaneous routes is to be given to Prof. Morgenroth, of Berlin (21). In conjunction with R. Levy (22), he showed that absorption of a colloid solution, such as diphtheria antitoxin, was subject to just the same conditions in the subcutaneous tissue and muscles as Meltzer and Auer had shown to apply to crystalloid solutions, viz. delayed absorption after subcutaneous injection, and rapid absorption after intramuscular injection.

The highest antitoxin value in the blood was naturally found after intravenous injection, but even after eight hours this concentration was found to have diminished, whereas in intramuscular injections, after eight hours, the antitoxin content of the blood came very close to that after intravenous injection. In four to five hours the antitoxin content with intramuscular injection was five to twenty times, and in seven to eight hours at least three to ten times, that after subcutaneous injection.

Confirmatory experiments were performed by Levin (14), who found that absorption of diphtheria antitoxin in goats occurred much more quickly with intramuscular than with subcutaneous injections.

This difference was particularly marked during the first few days, as the antitoxin concentration reached in the blood after ten hours was fourteen times greater after intramuscular than after subcutaneous injections.

Morgenroth's investigations induced clinicians to give intramuscular injections of antitoxin in the treatment of diphtheria, and this method was first used in E. Neisser's clinic at Stettin, as will be seen from Gabriel's paper published in 1909 (11).

Since then, intramuscular injections have largely superseded subcutaneous in German hospitals, as reference to the writings of Baginsky (1), Bauer (3), Blühdorn (6), Eckert (8), Hoesch (13), Lorey (16), and Schreiber (26) will show. Ganghofner (12), of Prague, and Feer (9), of Zürich, have also recently adopted the

method. So far, however, to judge from the literature,* the practice of intramuscular injections of diphtheria antitoxin has been confined to German-speaking countries. As regards the site of injection, Gabriel, Eckert, Berlin, and Hoesch use the gluteal region, while Baginsky, Feer, and Ganghofner, following the advice of Morgenroth Levy, prefer the outside of the thigh.

A recent visit by one of us (J. D. R.) to Prof. Schlossmann's clinic at Düsseldorf, where we were assured by Dr. J. Bauer of its harmlessness and simplicity, induced us to make a trial of the method. The present paper is based on our experience of the last six months, during which period, thanks to the collaboration of our colleagues, intramuscular have entirely supplanted subcutaneous injections at the Grove Hospital.

In all, 412 injections have been given to 339 patients, whose ages ranged from two weeks to thirty-seven years, but only 35 were above the age of fifteen years. After subtracting 33 cases still under treatment, as well as 45 patients who, after injection, were found not to have diphtheria, 261 completed cases of diphtheria, to whom 324 injections were given, are left. Fifteen died, a mortality of 5·7 per cent., which is reduced to 4·6 per cent. on excluding 3 cases who died within twenty-four hours of admission.

Classification and Dosage.

The cases have been classified according to the localisation of the membrane and the character of the attack, as follows:

Table I.—*Classification of Cases.*

1. *Faucial cases with or without nasal or laryngeal involvement:*	
Severe	67
Moderate	45
Mild	117
2. *Nasal cases only:*	
Mild	17

* We are indebted to Dr. Germain Blechmann for informing us that intramuscular injections of antitoxin are not employed in any of the children's hospitals in Paris. Dr. C. B. Ker, however, in a letter dated February the 13th, 1914, informs us that he has been using the method exclusively at the City Hospital, Edinburgh, for the last six months, owing to the recommendation of the practice in the new edition of Baginsky's book. Lastly, Dr. Brückner, Medical Superintendent of the Dresden Children's Hospital, writing on May the 3rd, 1914, tells us that for the last year he has given diphtheria antitoxin intramuscularly and occasionally intravenously as well.

3. *Laryngeal cases only :*

Severe	9
Moderate	2
Mild	2

4. *Conjunctival only :*

Mild	1

5. *Aural only :*

Mild	1
Total	261

The severe faucial cases received from 16,000 to 20,000 units on admission, usually the same, but sometimes a smaller dose, being repeated if necessary on one or two of the following days. The moderate faucial cases received from 8000 to 12,000 units on admission, the same dose being occasionally repeated on the following day. The mild faucial cases received from 4000 to 8000 units, and it was rarely found necessary to repeat the dose.

The cases of nasal, laryngeal, conjunctival or aural diphtheria in whom there was no faucial involvement, and consequently little, if any, toxæmia, received from 4000 to 12,000 units. Table II shows the total amount of antitoxin given in each case.

TABLE II.

Doses.	Cases.	Remarks.
4,000	40	
8,000	97	1 death on forty-fifth day from glottic spasm.
12,000	56	3 deaths, 2 from toxæmia within twenty-four hours of admission, and 1 from broncho-pneumonia.
16,000	18	
20,000	15	2 deaths, 1 from toxæmia, 1 from cardiac paralysis.
24,000	10	1 death from glottic spasm.
28,000	10	4 deaths from toxæmia, 1 within twenty-four hours.
32,000	7	2 deaths from toxæmia.
36,000	3	All recovered, and none had any rash.
40,000	4	2 deaths from toxæmia. One of the survivors had palatal palsy only, the other no complications. Neither had any rash.
44,000	1	Recovery with palatal palsy only. No rash.
	261	

The average dose for each patient was 12,459 units—a dose slightly below the average used in the Board's hospitals, in which, since 1908, the average dose has ranged from 14,571 to 17,328 units (27).

Our dosage for intramuscular injections has indeed been decidedly smaller, especially in severe cases, than it had been for subcutaneous. In a paper published by one of us in the Board Reports for 1908 (23), it will be seen that out of 78 hæmorrhagic cases, 40, of whom 7 recovered, received doses varying from 42,000 to 72,000 units; while out of 22, who received less than 33,000 units, none recovered. With intramuscular, as with subcutaneous injection, the frequency of rashes and other serum phenomena, in spite of large doses, is less than usual, as is the rule in severe diphtheria.

The principal objection to large doses is their expense. Baginsky (2) calculates that an injection of 40,000 to 50,000 units costs from fifty to eighty marks. In the Board's hospitals, however, when the cost per 1000 units is but sixpence halfpenny, the expense would be less than half that amount. Although experimental evidence in favour of large doses of antitoxin has been brought forward by Dönitz (7) in 1899, and more recently by Fritz Meyer (19), most of the German authorities give relatively small doses. Thus Baginsky (1) gives 1500 units in mild cases and only 3000 to 4000 units in severe cases. The most that he has ever given has been 15,000 units. Similar doses are recommended by Bauer (3), Feer (9), Gabriel (11), Ganghofner (12), Hoesch (13), Lorey (16), and Schreiber (26). Eckert, assistant to Heubner at the Charité in Berlin, alone has employed such enormous doses as 36,000, 42,000, 53,000 or 64,000 units.

Technique.

Without preliminary washing the outer side of the thigh in its middle third is painted with a 2 per cent. solution of iodine, the needle is driven deep into the body of the vastus externus, and the injection is given in the ordinary way. Twenty thousand units (= 50 c.c.) can be readily injected even in small children, but we have never exceeded this dose at one time. Our youngest patient, aged 2 weeks, received 4000 units for nasal diphtheria without any ill-effects. It is not necessary to follow Morgenroth and Levy's advice to aspirate before injecting in case a vein has been punctured. Directly the needle has been withdrawn after injection, the site of puncture is again painted with the iodine solution and a collodion scab is applied.

The choice of the thigh in place of the abdomen, the usual site for subcutaneous injection, facilitates examination of the liver, which, as one of us has previously shown (24), should form part of the routine examination of every severe case of diphtheria, but is often rendered difficult by the excessive tenderness due to the injection.

The thigh is to be preferred to the gluteal region not only because there is less probability of injuring important vessels or nerves, but also because the thigh muscles are much more compact and exercise greater pressure on the injected fluid, rendering absorption more rapid.

Intramuscular injection of antitoxin is thus quite as simple as subcutaneous, and infinitely less troublesome both to doctor and patient than the intravenous method, over which it offers this further advantage—that an antitoxin free from antiseptic is not required. A still more important fact which has been ascertained by Morgenroth and Levy is that by the intramuscular method for the first few days after injection a fairly uniform and high concentration of antitoxin in the blood is effected, whereas after intravenous injection even at the end of twenty-four hours about two thirds of the antitoxin have already disappeared from the blood.

Not only is the actual injection much less painful, but the subsequent pain, which often causes a restless night and persists for two or three days after subcutaneous injection, is ill-marked and often entirely absent. On this point our observations have been confirmed by the unanimous testimony of nurses both in the receiving room and in the wards.

Fomentations, which used to be applied in a large proportion of all cases injected, are rarely required now.

Rashes and other serum phenomena occur at about the same time and present the same features after intramuscular as after subcutaneous injection. When the injection has been made in the vastus externus, urticaria first appears on the thigh, and subsequently either becomes general or remains localised.

Several cases gave a history of a previous attack of diphtheria within recent years, for which they had been injected subcutaneously; and three had a relapse while under treatment in hospital. None showed any symptoms of anaphylaxis as the result of reinjection, an accelerated reaction being merely observed in some, but not all the cases.

Table III shows that the frequency of serum phenomena after intramuscular injection is about the same as that set forth in the Board's Annual Reports since 1905, when a marked drop in their incidence took place.

TABLE III.—*Frequency of Serum Phenomena.*

	Cases.	Percentage.
Urticaria . . .	90	34·4
Circinate erythema .	25	9·5
Pyrexia . . .	33	12·6
Joint pains . . .	15	5·7
Adenitis . . .	7	2·6

Abscesses at the injection site, the frequency of which in the Grove Hospital cases has varied during the last ten years from 0·2 to 1·4 per cent., did not occur in any of the 339 injected.

As regards the rapidity with which membrane disappeared from the fauces or laryngeal symptoms subsided, there was no appreciable difference between the subcutaneous and intramuscular methods, but it is noteworthy that several observers (Berlin (4), Beyer (5), Fette (10), Mixsell (20), and Schreiber (26)) have said the same of intravenous as compared with subcutaneous injections. The incidence of albuminuria after intramuscular injection was also about the same as usual. Otitis occurred in 10 cases, and broncho-pneumonia in 3. Of chief interest, however, was the incidence of paralysis. Of the 261 cases, 33, or 12·6 per cent., showed some paralysis, but only two of these were severe. Eighteen were examples of palatal palsy, usually shown by a nasal voice only without regurgitation of fluids, 8 of ciliary palsy, 1 of squint only, 2 of palatal palsy and squint, 2 of palatal and ciliary palsy, 1 of cardiac palsy which died, and 1 of palatal pharyngeal and diaphragmatic palsy which recovered.

We are inclined to think that life might have been saved in the one case and the paralysis have been rendered less extensive in the other had larger doses of antitoxin been given during the acute stage. Though the total number of cases is too small to be absolutely conclusive, the comparatively low rate of paralysis, especially of a severe character, in the present series is worthy of note, and is in striking contrast to the higher incidence noted by one of us (25) in a study of 2300 cases treated by subcutaneous injection, of whom 477, or 20·7 per cent., had some form of paralysis with 181 severe and 85 fatal cases.

The mortality, especially considering the high percentage of severe cases, was remarkably low, but here again a larger number of cases is required before a definite conclusion can be drawn.

Of the 15 deaths, 13 took place before the throat became clean, 11 being due to toxæmia, 1 to broncho-pneumonia, and 1 to cardiac

paralysis. The remaining 2 deaths occurred on the ninth and forty-fifth days respectively in tracheotomy cases and were apparently due to spasm of the glottis.

Our results appear to be sufficiently encouraging to justify the continuance of this method of antitoxin administration to the exclusion of any other, and it is with the hope that the method may receive more general recognition that this paper has been written.

Summary.

Intramuscular injection, preferably in the vastus externus, deserves to supersede all other methods of administration of antitoxin in the treatment of diphtheria for the following reasons :

(1) It is quite as simple as the subcutaneous method, ensures much more rapid absorption, is less painful, and less liable to give rise to abscesses at the injection site.

(2) It is superior to the intravenous method, not only in the greater simplicity of its technique, but also in the less rapid excretion of antitoxin after injection.

(3) The more rapid absorption of antitoxin by the intramuscular route is shown, not by the effect on the faucial or laryngeal process, but by the lesser incidence of paralysis, especially of a severe kind.

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SALVARSAN AND NEO-SALVARSAN IN THE TREATMENT OF HEREDITARY SYPHILIS.

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The claims of arsenical preparations, such as salvarsan and neo-salvarsan, to displace mercury in the treatment of all cases of congenital syphilis still lack support in a good many quarters, and the reason is quite obvious. Mercury is an old and well-trusted remedy, it is easily administered, and its beneficial effects are in many cases speedily seen. But in certain other cases, where treatment has been omitted until the patient is practically in a hopeless condition, where the symptoms are exceptionally acute, or fail to respond to mercurial treatment, quite brilliant results can sometimes be obtained by the use of arseno-benzol or its derivative. The mortality of congenital syphilitics is often overlooked, but the records of nearly two thousand syphilitic pregnancies collected by Hyde leave us under no misapprehension. Of these 1700 pregnancies, 1535 resulted either in abortion or death before the end of the first year, and it has been estimated that as many as 99 per cent. of artificially reared syphilitic infants die within the first twelve months. The percentage of cases treated by mercury is of course not recorded by the registrar, but it is probable that quite a large number of these cases were so treated, and these statistics show that some other additional method—a more successful method—is needed for their treatment.

Since the introduction of salvarsan and neo-salvarsan the literature dealing with their successful employment in adults has become almost unmanageable, and quite an appreciable number of papers has been written about their employment in congenital syphilis.

At first, of course, in congenital syphilis, salvarsan was used, and it was injected intramuscularly, and my experience of this I recorded in the 'Practitioner' of July, 1911 (2). Afterwards it was injected intravenously. Some of the most interesting results obtained by this method are those of Holt and Brown (5), who in fifteen months treated thirty-four cases by intravenous injection of salvarsan only. The ages of the patients were from one month to four and a half years. The second dose was given fourteen days after the first, and subsequent doses at intervals of one to two months, according to whether the Wassermann reaction proved positive or negative. In their cases the reaction was, previous to treatment, always positive, and the average date of its becoming negative was three and a half months. Of the thirty-four cases, syphilis *per se* was responsible only for the death of five patients, but eighteen died from intercurrent diseases. The beneficial effects of salvarsan were most marked in the case of skin lesions.

Noeggerath (10) recommends the intravenous injection of concentrated solutions of salvarsan in infantile syphilis. He employs Weintraut's alkaline solution and injects it into the cranial veins, on account of the difficulty of injecting it into the veins of the arm without exposing them by operation. The difficulty lies in the possibility of escape of salvarsan into the tissues by penetration of a vein owing to the movements of the child. The concentrated solution contains 0·1 grm. of salvarsan in 2 c.c. and can be injected with a Pravaz syringe. The minimum efficacious dose is said to be 2 mg. per kilogramme of body-weight, but the dose should be increased whenever possible up to 0·1 grm. for each injection. Secondary unfavourable effects he seldom saw. Out of twenty-eight cases treated nine died.

La Fétra (6) treated twenty-five cases of hereditary syphilis in 1912, and of ten cases treated with salvarsan, with or without mercury, two died, while the others gained in weight and the syphilitic symptoms disappeared. Fifteen were treated with mercury alone, and of these, ten died, three improved, and two did not improve.

Andronescu (1) treated six cases of hereditary syphilis by direct injection into the infant, with success in four cases, aged respectively 1 month, 6 weeks, 7 months, and 4½ years.

Maccone (8) records ten cases in children aged 18 months to 12 years treated by salvarsan. Five recovered, four showed improvement, and in one there was no change. For infants he recommends intramuscular injection into the buttocks and intravenous injection for older children.

E. Welde (13) treated twenty-six cases with salvarsan, injecting it beneath the skin of the back in 1 to 3 c.c. of oil or other fluid. This, however, he found gave so much pain, that in the last ten cases he tried to inject it intravenously, but was not always successful. A few were injected intramuscularly. The results of the injections were good.

G. S. Strathy and G. A. Campbell (12) record the results of treating eighteen cases of late hereditary syphilis with salvarsan, and of these patients seventeen were injected intravenously, one intramuscularly. All improved clinically: gummata, periostitis and ulcers disappeared rapidly, while keratitis improved more than with mixed treatment. The results were better than those obtained with mercury, which had already been used in more than half the cases.

Good results from direct injection of the child with salvarsan have also been reported by Escherich (4) (6 cases), Lesser (7) (9 cases), Miekley (9) (5 cases), and Simpson and Thatcher (11) (40 cases).

I discussed fully the injection of salvarsan intramuscularly and intravenously in the British Journal of Children's Diseases for April, 1912 (3), but, since then, I have preferred to use neo-salvarsan.

The ease with which salvarsan ("606") combines with the hydrochlorides of various metals guided Ehrlich in his attempts to find a more soluble and non-toxic substitute, and this has, as we know, been placed on the market under the name of neo-salvarsan ("914").

The yellow powder is rapidly soluble in water, giving a perfectly neutral solution of a yellowish tint. The preparation of the injection fluid is therefore quite simple, and the neutralisation with soda, which had to be accurately carried out in a case of the old salvarsan, is now no longer necessary.

It is quite possible that some of the disagreeable after-effects which occasionally followed the use of the salvarsan were due to the soda employed, which was not easy to obtain chemically pure and frequently contained potash or ammonia, and, moreover, was difficult to keep perfectly sterile.

It is obvious, therefore, that an advantage is gained in not having to neutralise with soda in the case of neo-salvarsan. But the oxidation products of neo-salvarsan are toxic, just as are the oxidation products of salvarsan, and it is necessary to inject the solution immediately it has been prepared, and, moreover, not to warm the solution after it has been made. I find that the injection of a quite cold solution is disagreeable to the patient, so I make a practice of warming the salt solution to a temperature of 65° F., and then adding the neo-salvarsan. The injection fluid can be quite well

prepared with sterile feebly distilled water, or even boiled tap-water, but such a solution is somewhat hypotonic and occasions slight hæmolysis, so it is better to employ a sterile 0·4 per cent. saline solution made with freshly distilled water. The quantity of fluid must be calculated on the basis of 25 c.c. to each 0·15 grm. neo-salvarsan for intravenous injection. For intramuscular injection only 3 c.c. of freshly distilled water are required for each 0·15 grm. and this gives an approximately isotonic solution. Of course much more concentrated solutions of neo-salvarsan can be made and injected intravenously, but personally I do not care to inject solutions of the strength of about 0·1 grm. neo-salvarsan in 1 c.c. saline with young children or babies.

The technique is of course simpler, but the danger of unfavourable complications is in my opinion greatly increased.

The pain of intramuscular injection is much diminished by first injecting a few c.c. of a $\frac{1}{2}$ per cent. novocaine solution, leaving the cannula in position, and after a few minutes injecting the neo-salvarsan through the same cannula.

With regard to the actual dose of neo-salvarsan administered, it must be remembered that its arsenic content is less than that of salvarsan, and therefore a larger quantity must be given. The simplest method of calculating the dose of neo-salvarsan is to take 0·15 grm. per kgrm. of body-weight, and this will mean that very young babies require a dose of 3 to 4 cgrm. given intravenously. The actual injection of the fluid into a baby's vein is not difficult, provided a small-bore needle is employed. The solution contains no solid particles, so the finest needle cannot get blocked. The amount to be injected is less than 10 c.c., and if the median basilic or external jugular vein be exposed, the needle can be inserted and the fluid injected without difficulty. With regard to the external jugular vein, the needle can in some cases be inserted and the injection made without any anæsthetic. The child is tightly rolled in a blanket, and the head placed on a hard cushion and immobilised by an assistant. The jugular veins are often unusually prominent in rachitic and heredo-syphilitic children, and the child's cries also tend to render the vein more prominent. When the external jugular vein is badly marked, it may be possible to utilise the temporal vein. The head is in this case also held absolutely steady, and the needle inserted directly into the vein while the vein is made prominent by the infant's cries, but the patient's skull is not such a satisfactory support for the operator's hand, and there is a risk of the needle slipping out of the vein. If a concentrated solution of the drug is being used, such an

accident leads to somewhat unpleasant inflammatory reaction round the point of injection and possibly phlebitis. These veins are certainly wanting in elasticity, and a hæmatoma sometimes follows the withdrawal of the needle unless a pad is immediately applied. When inserting the needle, there is always the possibility that it may not enter the vein at the first attempt, or may pass right through the vein. This is easily detected by having two syringes which fit the same needle, filling one with sterile saline solution and the other with the required dose of neo-salvarsan. The needle is attached to the syringe containing saline solution, inserted into the lumen of the vein, and some saline solution injected. If the needle is proved to be in proper position and the fluid passes readily in, the needle is left in place, and the syringe containing neo-salvarsan attached to it and the drug injected. If the salt solution does not freely enter the vein, the needle must be withdrawn slightly and moved about until it is right inside the lumen of the vein. In babies I have tried injecting the fluid intravenously by gravity from a glass vessel hung from the ceiling, but the needle and the vein both have so small a bore that the process is very tedious, and there is great danger of clotting.

In cases where several injections, or a series of injections, must be given, the advantage of administering the drug without an anæsthetic and without dissecting out the vein and leaving a scar is obvious, but the absolute immobilisation of the patient is one of the great difficulties, and two or three capable assistants are always necessary if the result is to be successful.

In every case it is wise to start with a small dose, even if this be raised considerably in subsequent injections. Such small initial injections are rarely followed by any considerable rise of temperature, and it is probable that any rise of temperature following the second or subsequent injections is due to the injection fluid not being perfectly sterile. Sometimes a leucocytosis follows the injection; occasionally urobilin appears in the urine. I consider it unwise to inject neo-salvarsan into patients who have marked cerebral involvement, and I am strongly of opinion that it should not be used in patients who have kidney disease or albuminuria.

At the April meeting of the Children's Section of the Royal Society of Medicine, I showed some cases of heredo-syphilis treated by intravenous injection of salvarsan and neo-salvarsan, of which the following case has some points of interest. The patient was a baby, who was admitted to the Queen's Hospital for Children when aged 11 weeks. When a little over a month old he commenced to show

typical symptoms of hereditary syphilis, and when taken into hospital he was almost covered with a maculo-papular eruption ; there was a profuse muco-purulent discharge from the nostrils, there were numerous offensively smelling condylomata round the anus and on the buttocks, the child was wasted and looked emaciated. In addition to the skin-lesions, there was swelling and tenderness of the right wrist, but of no other joint or bone. The condition was apparently that known as syphilitic epiphysitis, but a skiagram showed that the shaft of the radius was considerably diseased, there being well-marked cancellation and rarefaction of the diaphysis, and in addition there was a considerable amount of periostitis spreading up the shaft of the radius and also of the ulna.

The Wassermann reaction was strongly positive. The child was admitted to hospital on April the 11th, and at 2 p.m. on April the 12th a dose of 0·06 grm. neo-salvarsan was injected into the left external jugular vein. At 10 p.m. on the same day the temperature rose to 103° F., but fell again next day almost to normal. The pulse rose from 120 to 136 at night.

The injection of neo-salvarsan was repeated on April the 18th into the right external jugular, but this caused the temperature to rise only above 99°. The dose was calculated in each case at 0·15 grm. per kilo of body-weight. The mother came to the hospital three times a day to suckle the child, and, in addition, five feeds a day were given of milk, water and lactose, an ounce and a half of the former and half a drachm of lactose. Within a week after the second injection all the skin symptoms had subsided, the snuffles had disappeared, and the tenderness of the wrist had vanished and the swelling was less.

Inasmuch as the general condition had so greatly improved, the skin lesions had healed up, and the child's life was no longer in imminent danger, it did not seem to me necessary to continue the use of a drug whose chief characteristic was rapidity of action. The wrist condition was not a troublesome one, and hardly caused any inconvenience, so I put the child upon a course of mercury, the action of which may be slow, but is sure, and under its influence the epiphysitis has markedly diminished.

We have not as yet records of a sufficient number of cases of syphilis, chiefly virulent syphilis, in which it has been necessary to give six, seven or eight injections of neo-salvarsan, on which to base conclusions, but there is no reason to think that the drug produces any anaphylaxis, or that moderate doses may not be repeated seven or eight times when the syphilitic lesions prove resistant. It

has yet to be determined how far the first or second dose causes any immunity to the action of the drug. In babies, however, it is rare to need more than two or three injections of neo-salvarsan, and, after the first or second intravenous injection, I am rather in favour—if more is needed—of an intramuscular injection, since the arsenic is then so much more slowly eliminated, the additional store can be gradually drawn upon over a considerable period, and its beneficial effects gradually produced.

The Wassermann reaction is but of little use as a guide to the treatment of hereditary syphilis. In almost all cases of hereditary syphilis with active symptoms it is positive, and usually remains positive in spite of treatment while such active symptoms are present. In a large percentage of cases of late hereditary syphilis it is also positive. This test conclusively shows that the truth of Colles's law —that a syphilitic child procreated by a syphilitic father never infects the mother—depends on the fact that the mother is already infected. This infection is in most cases the so-called conceptional syphilis.

In conclusion, as to the important question, under what circumstances salvarsan or neo-salvarsan should be employed in the treatment of hereditary syphilis, my view is that the drug should be used in those cases where rapidity of action is of prime importance. When the child is so ill that there seems little chance of it surviving, when mercury has already been tried and the child seems to be still sinking, or when mercury has proved inefficient after continued use, then I have no hesitation in injecting neo-salvarsan. That some cases of syphilis prove absolutely resistant to mercury we, of course, all know, and it is quite wonderful to see how often these cases clear up under treatment with neo-salvarsan. Without for a moment wishing to claim that the drug is an infallible cure for hereditary syphilis, I will only say that for rapidity of action and power of healing up syphilitic symptoms nothing superior has up to the present been discovered.

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A CASE OF MESENTERIC THROMBOSIS IN YOUTH ORIGINATING FROM A CASEATING TUBERCULOUS GLAND.,

By H. Leith Murray, M.D.
Hon. Assistant Surgeon, Hospital for Women, Liverpool; Hon. Consulting Gynæcological Surgeon, Northern Hospital, Liverpool.

Mesenteric thrombosis in youth is a very rare condition, and the following instance appears worthy of record.

History of Illness.—On the afternoon of September the 22nd, 1913, I was called by Dr. A. C. E. Harris, of Birkenhead, to see a girl, aged 14½ years, who had been seized that morning with acute abdominal pain. She had been perfectly well the night before, and her bowels had moved normally earlier in the day. The pain, which began about 11 a.m., was sudden in onset and severe and griping in character; she perspired freely, but did not vomit, and for the time being, looked acutely ill. Her temperature was normal and her pulse 140. The abdomen appeared generally tender, but not markedly so, and there was no distension. Early in the afternoon, however, the pain greatly improved and the patient appeared relatively comfortable. There now became evident a rather indefinite swelling above the pubes.

As the breasts had been developing for a few months the possibility that the symptoms were due to some retention of the menses with leakage decided Dr. Harris and his partner, Dr. Pollard, to call me in consultation.

There was a history of occasional attacks of pain in the abdomen—not particularly in the lower abdomen—for the last few years. These attacks had usually been accompanied by vomiting and the last of them had occurred two months previously. Tuberculous glands had been removed from the neck a few years earlier and her family history was markedly tuberculous.

Examination.—The girl appeared slight in build and rather fragile. Beyond the breast development there were no other signs of puberty. Her face was pale, but not anxious—certainly not a peritoneal face. She expressed herself as being now free from pain, but obviously

dreaded a return of the agony of that forenoon. Her temperature was normal, the pulse 90 and of good volume. The abdomen was flat and showed a very slight general tenderness without any rigidity, there was no thickening over the vermiform appendix, and no cutaneous hyperæsthesia. Deep pressure above the pubes showed a rounded swelling rising about one inch above the symphysis. It was central in position, slightly movable, soft in character, no more tender than the abdomen as a whole, and might well have represented a distended uterus. There was no fluid in the abdomen and no sign whatsoever of any obstruction. A rectal examination gave no indication of intussusception and showed the vagina to be empty. The lower end of the swelling was distinctly felt; it was practically non-tender, gave the impression of being cystic with a solid base, and could not be definitely separated from the cervix. No evidence of any tubal swelling could be made out laterally.

The diagnosis, then, was doubtful, but in spite of her age, hæmatometra seemed the most likely.

As the girl appeared so absolutely relieved we decided to postpone operation till next day. Unfortunately the severe pain suddenly recurred at 4 o'clock in the morning and by 6 a.m. she was in a state of collapse; there had been continuous vomiting and diarrhœa since the recurrence of the pain.

She was carried as soon as possible to a Nursing Home and was there etherised about 7 a.m. It was perfectly obvious from her condition that any operative procedure would have to be very rapidly performed, her pulse being practically uncountable.

There was now obvious distension of the abdomen with ladder patterns, and even under the anæsthetic, the swelling over the pubes was almost obscured; free fluid was now obvious.

Operation.—A mesial sub-umbilical incision was made and at once there escaped a large quantity of blood-stained fluid with a faintly fœcal odour. Several knuckles of small bowel, extremely distended, purple and shining, protruded. On exploration there was found a swelling the size of a pigeon's egg immediately above the pelvic brim which, on closer investigation, proved to be a caseating tuberculous gland. This was very adherent and situated at the base of the mesentery, which here had the same purple colour as the bowel. Attached to the gland was a band of omentum. When this had been released it was possible to pull the bowel out and to reach a spot where the distended and ecchymosed bowel suddenly changed both in calibre and appearance to the normal; this spot was about two feet from the ileo-cœcal junction. An attempt was made to find

the upper limit, but the patient's condition had become so alarming that it was found necessary to insert a drainage tube and immediately close the abdomen. The pulse improved for an hour or two, but the girl died six hours later.

Post-mortem.—A post-mortem examination was performed that evening about 7 p.m. The peritoneal fluid was already very foul. About ten feet of small intestine were hugely distended and well on the way to gangrene; the peritoneal coat had not, however, altogether lost its lustre. Commencing in the region of the abdominal gland, which itself was soft and caseating with several hard plates of calcareous material towards its posterior side, there was a well-marked thrombosis of a group of the intestinal branches of the inferior mesenteric vessels; both arteries and veins were implicated. This thrombosis spread as a fan-shaped area throughout the mesentery and finally was coterminous with the affected segment of intestine. The limits of this area of bowel were absolutely definite and both above and below the appearance was normal. No other tuberculous glands were discovered in the abdomen. The pelvic organs were normal.

Comments.—The condition at the onset of symptoms appears to have been one of shock alone, and it is remarkable that six hours later there should have been so notable an improvement. The "reaction," indeed, appears to have been very complete. With no pain, a normal temperature, a pulse of 90, and no evidence of obstruction or peritonitis, in spite of the history given by Dr. Harris and his partner Dr. Pollard that the girl was acutely ill when seen six hours earlier, one found no indication either for immediate operation, or of the extremely grave condition demonstrated later. With the suspicion that there was menstrual retention and a possibility of a leakage into the peritoneum one was particularly careful in examining the abdomen for free fluid, but none could be demonstrated. There can be no doubt that the solitary tuberculous gland was the focus of the trouble and its cause. The ladder patterns so well seen on the morning of the operation were probably caused by the taut omentum which was certainly compressing the bowel at the lower end of the distended area where there was a sudden diminution to the normal calibre.

Royal Society of Medicine.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

Friday, March the 27th, 1914.

The President, Dr. Leonard Guthrie, *in the Chair.*

Ocular Torticollis.—Dr. E. A. Cockayne.—The patient, a boy aged 6½ years, held his head to the left. Facial asymmetry was well-marked. There was a compensatory spinal curvature of the cervico-dorsal region with convexity to the right. In the position naturally assumed no squint was visible, but on straightening his head the right eye deviated upwards (strabismus deorsum vergens). There was no diplopia when the head was straightened. Ocular movements were good. No shortening or rigidity of the sterno-mastoid had occurred and the head could be tilted over to the right voluntarily with ease. The condition was first noticed when he was two months old.

Congenital Deficiency of Vertebræ and Ribs.—Dr. Cockayne.—The patient, a female aged 9 months, showed a well-marked dorsal scoliosis with convexity to the left. There was a depression in the right upper dorsal region and also a prominence in the lower dorsal and upper lumbar region on the same side. The first, second, eleventh, and twelfth dorsal vertebræ with their ribs appeared to be normal. The third to the tenth vertebræ had a well-developed left half, but the right halves were separate from the left, were small and irregular in shape, and, in some instances, were fused together. The ribs were given off very irregularly on the affected side.

Hereditary Blue Sclerotics and Brittle Bones.—Dr. Cockayne showed a female child, aged 1 year and 10 months. The child had never walked and had dark blue sclerotics. The father also had blue sclerotics and broke both legs at the age of 16. The grandfather and an aunt also had blue sclerotics and at various times had fractured bones.

Hirschsprung's Disease.—Mr. C. Max Page showed a case in a male child aged 2½ years. The condition was first noticed two years ago while an in-patient at St. Thomas's Hospital suffering from diphtheria. A laparotomy was performed and an enormously hypertrophied loop of pelvic colon was tapped and a colostomy established just proximal to the hypertrophied area. Improvement followed and the colostomy was closed, but subsequently had to be re-opened owing to the recurrence of symptoms. The colostomy again closed and the wound had now been sound for a year, the bowels acting with medicine. X-ray examination showed an enormous loop of colon still present.

Two Cases of Achondroplasia.—Mr. Max Page.—Both were typical cases and were being treated with thyroid extract.

Spastic Diplegia.—Dr. R. A. Chisholm showed a case in a boy, one of twins, aged 11 years. He was born by foot presentation, but the labour was otherwise normal. There was marked spasticity of both arms and the

face was also somewhat affected. The legs were also somewhat spastic, but less than the arms, and he could walk well. There was a marked jaw jerk the deep reflexes were all very brisk, plantar reflex was extensor, and the bladder and rectum were normal. There was slight twitching, but no true athetosis and no inco-ordination. Wassermann test was negative.

Multiple Exostoses.—Mr. Philip Turner.—The patient, a boy, aged 13 years, showed bony outgrowths near the extremities of most of the long bones. Of special interest were a very large exostosis attached to the outer surface of the ilium and a small tumour growing from the lamina of one of the dorsal vertebræ. The boy's father, a man, aged 35 years, also had multiple exostoses, among which was a very large one growing from the outer surface of the left ilium. In neither case did the tumours cause any disability.

Congenital Heart Disease.—Dr. F. G. Crookshank.—The patient, a girl, aged 14 years, had dyspnœa on exertion and anginoid pains down the left arm. A long systolic murmur was heard over the præcordium and could be traced at the back of the chest to the left of the vertebral column. The symptoms, physical signs, radiogram, and electrocardiogram together appeared to indicate the patency of a persistent ductus, with some pulmonary stenosis and hypertrophy of the right ventricle.

Hodgkin's Disease.—Dr. J. T. Leon.—A boy, aged $10\frac{1}{2}$ years, had a mass of cervical glands considered to be tuberculous removed in 1912. He was now markedly anæmic, and had enlarged axillary and cervical glands. The spleen was palpable but the liver did not appear to be enlarged.

Subcutaneous Injury to the Median Nerve at the Elbow.—Mr. Sidney Boyd.—In August, 1913, the boy fell off a bicycle and fractured the lower end of the right humerus. In October the flexor muscles supplied by the median were paralysed, but there was no anæsthesia. The arm was put upon a splint with the affected muscles relaxed and regular massage instituted. Considerable improvement had resulted.

Congenital Torticollis.—Mr. Chad Woodward.—A lump the size of a walnut was noticed in the left sterno-mastoid when the child was aged 5 weeks, two weeks later it was found that the head was beginning to deviate to the right. The birth was by a breech presentation.

Cirrhotic Liver with Perihepatitis.—Dr. J. W. Carr showed a specimen taken from a boy, aged $2\frac{1}{2}$ years, who was shown at a meeting of the Section in November, 1913, and died in January, 1914. The Wassermann reaction was negative on three occasions and there was no evidence of syphilis. The liver was large and tough and there was marked perihepatitis. Histologically the liver presented in the main the features of an early multilobular fibrosis.

Tuberculous Kidney.—Mr. Sidney Boyd, showed a specimen removed from a child aged 3 years, under spinal anæsthesia. It showed advanced tuberculous changes with extensive cavitation and infiltration of pelvis and ureter. The child made a good recovery from the operation.

Cirrhosis of the Liver.—Dr. S. Wyard and Dr. H. D. Rolleston showed a specimen taken from a girl, aged 6 years. There was no history of alcoholism. While in the hospital the liver and the spleen were enlarged and the Wassermann reaction was positive. Some temporary improvement occurred on antisyphilitic treatment. The liver weighed 20 oz. The right lobe was nodular but the surface of the left lobe was smooth. On section both lobes showed cirrhosis, which was especially advanced in the left lobe. The spleen weighed 16 oz.

CLINICAL SECTION.

Friday, March the 13th, 1914.

Traumatic Sensory Aphasia treated successfully by Trephining and Removal of Clot.—Mr. V. Zachary Cope.—A girl, aged 14 years, was admitted to hospital on August 14th, with the history that three hours previously she had fallen down a flight of steps and struck the back part and left side of her head. She had since been semi-conscious and had vomited frequently. On admission the temperature was normal, the pulse 76 and respirations 16. She lay with her eyes closed, but when approached, opened them, and said "Don't hurt me, Daddy," and repeated the word "Daddy" frequently during examination. She had no recollection of the accident and with difficulty recalled her actions prior to the injury. She continually relapsed into a more drowsy condition, and her eyeballs kept rolling upwards. There was an abrasion and a very small scalp wound behind the left ear. There were no signs of fracture of the base, and no paralysis.

At first her condition was regarded as one of simple concussion and cerebral irritation, but gradually her pulse became slower till it was 50, and though fully conscious she did not speak a word. Examination on August 19th, showed that she understood words spoken to her, but was unable to repeat them. She could not answer any question intelligibly, and the only word she could utter spontaneously was her sister's nickname "Doodles" which she repeated throughout the examination. She was able to write spontaneously, but her writing was not intelligible. She was unable to write from dictation, or to read aloud. Ophthalmoscopy showed congestion of the retinal vessels and blurring of the edges of her discs. An operation was performed on August 21st, when a horseshoe-shaped flap was made with its base above the left ear. No clot was found outside the dura, which was tense, bulging and non-pulsatile. When the dura was incised a small amount of dark blood was found underneath, but a considerable quantity of old clot was found in the region of the occipital lobe and escaped under considerable tension. No subcortical hæmorrhage was found. The pulse at the end of the operation was 100; at the beginning it had been 50.

Recovery of speech after the operation was exceedingly quick, and within a week was practically complete.

Philadelphia Pediatric Society.

April the 14th, 1914, William N. Bradley, M.D., President.

Congenital Absence of both Hepatic Ducts.—Dr. Oliver H. Stansfield, by invitation, reported the case of a white girl, aged 3 months, admitted to the Polyclinic Hospital, February the 1st, with a history of jaundice since birth. Stools had always been white, "putty-like," large and frequent. Urine had always been unusually dark. She had had no other illness. Family history was also negative. Examination showed an extremely jaundiced, drowsy infant, with purpuric spots on both forearms. Sclera were deep yellow. Liver reached almost to the iliac crest on the right, and to the umbilicus on the left; it was firm, smooth, and not pulsating. Spleen was also markedly enlarged. Temperature was subnormal and pulse slow. Urine examinations showed increased urobilin and biliary pigments, no sugar, albumin or casts. Stools contained occult blood, much fat but no hydrobilirubin. Levulose hepatic function tests showed great hepatic inefficiency. Autopsy showed biliary cirrhosis with absence of both hepatic ducts. The gall-bladder was empty and unstained, never having contained bile. The pancreatic and retroduodenal portions of the common duct were present. Spleen showed moderate passive congestion.

Dr. J. P. Crozer Griffith said that the case was certainly a most interesting one and closely allied to congenital obliteration of the bile-ducts, of which he had been fortunate in seeing two instances. There were many grades of obstruction and a close association with congenital biliary cirrhosis. The method of production was uncertain and there was a decided division of opinion among writers as to the cause, some believing that the obliteration was primary, occurring as a malformation, the result, perhaps, of some inflammatory process developing during intra-uterine life. This might advance to such an extent that the lumen of the bile-duct was not only obliterated but that the entire duct had disappeared. This might be true in Dr. Stansfield's case. In such cases the cirrhosis of the liver, so often associated, is a secondary condition to the duct lesion, and would be more marked if the patient lived longer. One of Dr. Griffith's patients died at ten days. There was complete obliteration of portion of the common duct and the cirrhosis of the liver was trifling. The other view is that cirrhosis of the liver is primary, with a descending inflammatory change which finally involves the bile duct. In Dr. Griffith's second case, in which the cirrhosis was very marked, the child died at 5 months.

Umbilical Hernia.—Dr. Harry Lowenburg presented a new belt for the treatment of umbilical hernia in children.

Retroperitoneal Tumour.—Dr. F. R. Jacobs showed a girl, aged 4 years, with an abdominal tumour as large as a small cantaloupe in the left hypochondriac region, pushing forward against the abdominal wall. The tumour was firm, not tender or movable. Its duration was unknown. The child had vomited everything for some time. Since admission to the Howard Hospital, she had only vomited twice. There was no blood in the stools; urine was negative. Leucocytes were 12,800, with 74 per cent.

polymorphonuclears, 21 per cent. lymphocytes, 1 per cent. large mononuclears, and 4 per cent. transitionals. The X-ray was wholly negative. The probable diagnosis made was retroperitoneal sarcoma.

The Spleen in relation to Blood Destruction and Regeneration.—Dr. R. M. Pearce, by invitation, gave a lantern demonstration, with the following conclusions. Splenectomy in the dog is followed by anæmia of the secondary type, reaching its height after four to six weeks with return to normal after three to five months. It is followed by increased resistance of the red blood-cells; decreased tendency to jaundice when hæmolytic agents are injected; and a tendency, after six months, for the yellow marrow of the long bones to be transferred into red marrow.

Chronic Splenomegaly with Anæmia.—Dr. E. B. Krumbhaar read a classification and analysis of the different types of chronic splenomegaly with anæmia. Splenic anæmia was first established by Gretsel, forty-eight years ago, to denote anæmia with enlargement of the spleen without leucocytosis. It should now be restricted to the early stages of Banti's disease or discarded entirely. We now differentiate this from Gaucher's disease or large-celled splenomegaly; Banti's disease or splenic anæmia with hepatic cirrhosis; von Jaksch's *pseudoleukæmia infantum*, probably secondary to rickets; and the two types of hæmolytic jaundice with splenomegaly, Hayem-Widal or acquired type, and Chauffard-Minkowski or congenital or familial type. Dr. Krumbhaar analysed these types, interpreting each in the light of Dr. Pearce's experimental evidence. He also described the hæmatological tests used in diagnosis, resistance of the red corpuscles, percentage of reticulated cells, auto-agglutination test, etc. He also called attention to the cardinal features of acholuric jaundice, chlorotic anæmia, chronic splenomegaly, increased urobilin in the blood and urine, etc. A differentiation of the two types of hæmolytic jaundice, based on an analysis of 154 cases, showed that the anæmia was much more severe in the acquired types, Widal's "crises of deglobulisation" more frequent and the auto-agglutination test positive. Less confusion would result if the term "congenital" was discarded. Cases identical with the acquired type may follow acute infections but the signs of increased hæmolysis usually disappear when the underlying cause is removed. In very severe cases the picture may resemble that of pernicious anæmia. In treatment splenectomy has proved successful in both types of hæmolytic jaundice, whereas in pernicious anæmia only slight improvement has followed removal of the spleen.

Splenectomy as a Therapeutic Measure.—Dr. G. P. Müller said that splenectomy had been practised for many years for relief of a variety of affections, but with the exception of injury and tumour of the spleen many of the operations have been done on rather vague physiological grounds, without sufficient foundation for their performance. Splenectomy is indicated in rupture of the spleen, displacement with torsion of the pedicle, certain cases of hypertrophy from malaria, in cysts and tumours. It is on trial in Banti's disease, splenomegaly with hæmolytic jaundice and pernicious anæmia, the indications not being clearly marked. In rupture of the spleen, there is no necessity to remove the organ if the tear is small and the hæmorrhage easily controlled. The history of a blow or fall affecting the splenic area, followed by rigidity of the abdominal muscles and signs of hæmorrhage should be enough for an exploratory incision. It is not neces-

sary to wait for dulness in the flanks. In typhoid fever many cases of rupture of the spleen have been reported and rough handling of the spleen in this disease is to be deprecated. When the normal spleen is excessively mobile, the patient will be found to be visceroptotic; the hypertrophied spleen may also descend from its normal position, but adhesions in the hypertrophy of the ligament usually hold the organ in place. Removal of the spleen gives better results in these cases than fixation, but operation should not be countenanced unless definite symptoms have appeared. When tumour or cyst of the spleen has been diagnosed, splenectomy should be performed, although resection of a cyst has been successfully done. Splenomegaly occurs in many conditions. An enlarged spleen in malaria is not an indication for operation. Splenectomy is only permissible when grave symptoms are caused by undue tension on the pedicle or when torsion is threatened. In Gaucher's disease it is probable that lymph nodes and bone-marrow are also involved; splenectomy is not indicated theoretically, though some cases have been reported in which improvement followed operation. In Banti's disease splenectomy has apparently proved curative if performed in the early stage, before cirrhosis of the liver has become marked. In certain cases of hæmolytic jaundice associated with splenomegaly, either of congenital or acquired type, splenectomy is indicated, mostly upon empirical grounds. In pernicious anæmia splenectomy has recently been advocated by Eppinger. It is necessary to distinguish disease of the liver, of the portal vein, and certain other affections from the so-called splenic anæmia before submitting the patient to operation. Finally, the evidence of the decreased resistance of the patient to infection after splenectomy is conflicting.

Dr. J. S. Rodman said that he had been impressed by the papers. He had been much interested in a special phase of the subject, Banti's disease. Dr. Willard and he had reviewed the literature and concluded that Banti's name should be attached to the third stage of splenic anæmia. They tried to determine the relationship between thrombosis of the portal and splenic veins and splenomegaly. On account of the frequency of thrombosis of the portal and splenic veins at autopsy in cases of splenic anæmia, they attempted to produce in dogs obstruction of the splenic vein by ligature. Immediate enlargement of the spleen occurred, persisting about one month, gradually being replaced by atrophy. They also partially clamped the portal vein, again producing only temporary enlargement of the spleen. During the splenic enlargement, there was a leucocytosis which returned to normal three weeks after operation. They failed to produce splenic or portal thrombosis. They believed that thrombosis was more an accidental finding than of any great ætiological importance. They agreed with Pearce in attributing the anæmia to increased resistance, which in turn had been brought about by overaction of splenic cells. The operative mortality had been greatly reduced during the past decade. Up to 1900 Bessel Fagan found 36 per cent. died; in 1908 Johnson had a mortality of 18 per cent., including splenectomy for all conditions. From 1908 to 1912, 5 to 10 per cent. of cases in first and second stages died. In the third stage the mortality is much greater, about 56 per cent. A combination of splenectomy and Talma's operation has proved successful in the third stage.

Dr. W. W. Babcock referred to several cases illustrating splenic disease and injury. A boy, aged 8 years, who was entering the third stage of Banti's disease showed markedly increased susceptibility to infection after splenectomy. He had suffered from increasing gastric disturbances for three

years. The liver was atrophic and showed advanced cirrhotic change. After splenectomy the symptoms disappeared, but there was evident susceptibility to infection. Three years after splenectomy he caught what seemed to be a slight cold, which proved fatal.

Société de Pédiatrie, Paris.

March the 10th, 1914. (*Bulletin No.* 3.)

Cerebro-spinal Meningitis with Meningococcal Arthritis.—M. Comby and Mlle. Condat showed a girl, aged 6 years, who developed, during the course of a cerebro-spinal meningitis, a purulent arthritis of the right knee. After puncture, which failed to draw off the thick pus by aspiration, 10 c.c. of anti-meningococcal serum were introduced into the joint. Complete recovery resulted without deformity.

Permanent Microsphygmia and Microcephaly.—MM. Variot and Grandjean showed a boy, aged 9 years, with this condition. There was marked imbecility, but no ichthyosis.

The Dangers of Injections of Witte's Peptone in the Treatment of Hæmophilia.—MM. Lereboullet and Vaucher.—The first injections were well borne, but there was slight local reaction and rise of temperature with the first. The child seemed better for the treatment—the hæmorrhages ceased shortly after the commencement of the injections; but the twelfth was followed by intense local reaction and severe and fatal hæmorrhage.

Spasm of the Cardia with Œsophageal Dilatation.—M. Guisez showed a girl, aged 8 years, the subject of an intermittent spasm of the cardia, which subsequently became permanent. The cardia was completely obstructed by a muscular hypertrophy of unknown origin. Treatment consisted in dilatation by bougies.

M. Guisez also showed a collection of foreign bodies he had removed from the œsophagus and air-passages by means of bronchoscopy.

Wassermann's Reaction positive in the Infant and negative in the Mother.—M. Cassoute reported the case of an atrophic infant, without obvious signs of congenital syphilis, who gave a positive Wassermann reaction, while the mother's reaction was negative. M. Dufour discussed the case with reference to Colles' law.

Gangrene of the Foot in Diphtheria.—MM. Veau and Weber showed a girl, aged 5½ years, whose foot had been amputated for gangrene occurring on the nineteenth day of a severe attack of diphtheria, and due to arterial thrombosis.

Puncture of the Pericardium in Pericardial Effusion.—MM. Guinon and Malarte related the case of a boy, aged 13 years, the subject of purulent pleurisy, who had a severe attack of dyspnœa and cyanosis.

Radiography showed complete obscurity over the whole pericardial region. Puncture was made with negative result. A second puncture the following day entered the right ventricle and drew off some dark-coloured blood. The child recovered satisfactorily. In a second case of a boy, aged 2 years, suffering from purulent pericarditis and broncho-pneumonia, radiography gave a shadow over the whole pericardial region. A first puncture entered the right ventricle; the second, with a thicker needle, drew off a thick greenish liquid containing pneumococci. The speakers drew attention to the uncertainty of interpretation of radiographs of the heart and pericardium and the harmlessness of puncturing the ventricle.

M. Variot said that to penetrate the myocardium when the needle had passed through a septic fluid in the pericardium was to run the risk of infecting the heart-tissue and producing foci of myocarditis.

Loss of Substance of the Left Parietal Region with Right Hemiplegia and Mental Debility.—M. Variot and Mme. Chatelain reported the case of a girl, aged 6½ years, who had a gap in the left parietal bone, either due to a fracture during birth or in early infancy, or to syphilitic lesions affecting the cortex, meninges and cranium, or to congenital cerebral malformation with concomitant cranial malformation.

Vincent Dickinson.

Abstracts from Current Literature.

Medicine.

Diphtheria at the Hôpital Hérold (*'Bull. et Mém. de la Soc. Méd. des Hôp. de Paris,'* 1914, xxxvii, *p.* 54).—**H. Barbier** and **Aine.**—During the years 1911–12, 431 diphtheria cases were admitted to this Paris hospital. The mortality was 12 per cent. On eliminating those cases which died within twenty-four hours of admission, as well as those in which death was independent of diphtheria, the mortality was reduced to 7 per cent.—a slight increase over that in 1904–7, when the reduced mortality was 5·7 per cent. (*v.* British Journal of Children's Diseases, 1908, vi, *p.* 233). Delay in administration of antitoxin, due in great part to "serumphobia" on the part of the private practitioners, was responsible for many deaths. Other deaths were due to secondary infections, such as broncho-pneumonia or eruptive fevers.

J. D. Rolleston.

Is diphtheria frequently a bacteriæmia? (*'Amer. Journ. Dis. Child.,'* 1913, vi, *p.* 23).—**M. Nicoll, jun.,** and **Harriett L. Wilcox** allude to the frequency with which Conradi and Bierast (*v.* British Journal of Children's Diseases, 1912, ix, *p.* 508) and others found diphtheria bacilli in the urine, and record their own observations on fifty-four patients with fifty-six examinations of the urine. Twenty-five were routine cases, twenty-one were severe cases and eight were recent convalescents. Positive results were found in only two cases, belonging to the second group, and may possibly have been due to accidental contamination. The writers conclude that diphtheria bacilli may occasionally gain access to the blood and be excreted in the urine in very severe cases of diphtheria, but maintain that

identification of diphtheria bacilli in the urine should not rest on morphological characteristics alone, but be confirmed by animal inoculation controlled by the use of antitoxin. J. D. Rolleston.

Diphtheria bacilli in the organs in fatal diphtheria (*'Deut. med. Woch.,'* 1914, xl, *p.* 594).—**Liedtke** and **Völckel** examined the organs in seven cases who died in the acute stage and in all found numerous typical diphtheria bacilli in the heart, lungs, liver, spleen, kidneys and bone marrow. In two cases portions of the brain were examined with a positive result. In every case the cultures from each organ were tested on guinea-pigs, and every strain was found virulent (*cf.* British Journal of Children's Diseases, 1913, x, *p.* 365). The writers also examined the urine of thirty diphtheria patients and in six found organisms which morphologically and culturally resembled diphtheria bacilli. In two cases these were virulent to guinea-pigs (*cf.* British Journal of Children's Diseases, 1912, ix, *p.* 508). J. D. Rolleston.

The diphtheria antitoxin-content of human blood-serum (*'Jahrb. f. Kinderheilk.,'* 1913, lxxviii, *p.* 442).—**H. Kleinschmidt,** using Römer's intracutaneous method, obtained the following results: (1) Out of eighteen infants, aged from 2 to 17 months, suffering from various diseases, but not diphtheria, in sixteen the blood was found free of diphtheria antitoxin. (2) The amount of antitoxin in the blood occasionally found in older infants who are not diphtheria carriers, is small (0·1 to 0·15 units per c.c. of serum). (3) On the other hand, the blood of sixteen infant diphtheria bacillus carriers, aged from 3 to 15 months, showed considerably higher amounts of antitoxin (·05 to 2·5 units per c.c. of serum). (4) In certain carriers, on repeated examination, an increase in the antitoxin in the blood was observed during the clinically latent diphtheria infection. (5) Infants, although diphtheria bacillus carriers, may remain free from diphtheria, although without antitoxin in the blood, presumably on account of local protection afforded by the mucous membrane. J. D. Rolleston.

Cardiac thrombosis in diphtheria (*'Rev. médicale de la Suisse rom.,'* 1912, xxxii, *p.* 60).—**A. D'Espine** and **H. Mallet.**—A boy, aged 6 years, had attacks of syncope and cyanosis on the eleventh day of diphtheria and died on the thirteenth. The necropsy showed a large number of parietal thrombi in both auricles and ventricles and a thrombus the size of a pigeon's egg on the mitral orifice and upper part of the left ventricle. Microscopically there was parenchymatous myocarditis. There were multiple emboli in the pulmonary arteries, but no infarcts. There were two small infarcts in the left kidney. J. D. Rolleston.

Obliteration of the arteries of the limbs in diphtheria (*'Thèses de Paris,'* 1913–14, *No.* 100).—**L. A. Bailly** has collected eighteen cases from literature including that reported by the abstracter (British Journal of Children's Diseases, 1910, vii, *p.* 529) and the following original one: A girl, aged 5½ years, after a severe attack of diphtheria, complicated by early paralysis of the palate and cardiac dilatation, developed signs of arterial obliteration in both lower limbs on the nineteenth day of disease. The condition cleared up in five days on the left side, but became more marked on the right, and a week after the onset all the toes and the superficial tissues of the anterior part of the right foot had become gangrenous.

After generalised paralysis recovery took place and the child was discharged after 58 days' stay in hospital, amputation of the gangrenous area being recommended. Bailly attributes the condition to embolism following cardiac thrombosis. The embolus was probably first arrested at the bifurcation of the aorta, as for twenty-four hours abdominal pain coincided with the disappearance of the femoral pulse, but later it became definitely fixed in the popliteal artery. J. D. Rolleston.

Diphtheritic vaginitis (*'Am. Journ. Obst.,'* 1914, lxix, *p.* 272).—**A. L. Goodman.**—A patient, whose age is not given, suffering from empyema following pneumonia, developed faucial diphtheria and shortly afterwards a foul vaginal discharge. The vulva and vagina were covered with dark greyish membrane, a culture from which showed diphtheria bacilli. After repeated injections of antitoxin a membrane, 8 cm. long, was brought away by the vaginal douche, leaving a red, raw surface, which bled moderately for a few days. Death occurred later from pulmonary œdema. Most of the recorded cases seem to have occurred in puerperal women, but eight of the cases reviewed by the writer were in children aged from 5 months to 15 years. J. D. Rolleston.

Diphtheria due to piercing of the ear-lobules (*'Wien. klin. Wochenschr.,'* 1913, xxvi, *p.* 1306).—**R. Pollak.**—A female infant, aged 19 days, had the ear-lobules pierced by the district midwife on October 4. On October 10 purulent crusts appeared at the punctures, and on the 12th a pustule on the upper lip. Subsequently more pustules appeared on the lips, gums, and tongue. The throat was not affected. The temperature gradually rose to 104° F., and death took place on November 3. Necropsy: The left lobule showed a round hole 2 mm. in diameter, surrounded by discoloured and softened tissue. The discoloration extended anteriorly up to the external meatus and posteriorly over the back of the pinna to the mastoid, where the skin was red, the epidermis peeling off, and the subcutaneous tissue and muscles œdematous. The right lobule showed a hole ¾ cm. in diameter, the edges of which were partly clean and partly covered with granulations. The surrounding tissue was swollen and reddened, and the epidermis was peeling off. The lesions extended to the back of the pinna, but the external meatus and mastoid region were free. There were lobular pneumonia of the right lower lobe, degeneration of the heart muscle, liver and kidneys, and numerous hæmorrhages in the superficial and deep parts of the lungs. Cultures of the lungs showed virulent diphtheria bacilli (*cf.* British Journal of Children's Diseases, 1913, x, *p.* 178). The spleen pulp was sterile. No bacteriological examination was made of the ears owing to the advanced destruction of the tissues.

J. D. Rolleston.

683 cases of the serum disease (*'Jahrb. f. Kinderheilk.,'* 1913, lxxviii, *p.* 565).—**L. Axenow.** The cases occurred among scarlet fever patients treated with Moser's serum in the Municipal Children's Hospital in St. Petersburg. The serum disease occurred more frequently in children under five years (74·5 per cent.) than above that age (59 per cent.). This may have been due to the relatively larger doses given to the younger children. Sex had no influence. The incubation period varied from three to seventeen days; in the majority of cases it was from seven to ten days. The disease lasted from one to thirty-two days, two maxima being noted, one of five

days and the other of two weeks. Urticaria occurred in 34 per cent., erythema of various kinds in 63·5 per cent., joint affections in 23 per cent., œdema in 12 per cent., and albuminuria in 9·5 per cent. In twenty-one cases death was due to the serum disease alone. In another thirty-seven fatal cases scarlatinal complications were also present, but they ran a mild course until the appearance of the serum phenomena, when they rapidly led to a fatal issue. Further, in eleven cases death was due not to the serum disease but to the serum itself. In four of these hæmolysis was noted, which was due to the condition of the serum, and in seven gangrene occurred owing to faulty technique. Treatment: Netter's and Besredka's prophylactic methods proved unsuccessful. Urticaria was best treated by sponging thrice daily with ½ per cent. carbolic solution or by a dessertspoonful of 2 per cent. sodium bromide at night. Arthralgia was relieved by alcohol compresses, local hot baths, and occasionally by salicyl preparations. J. D. Rolleston.

Anomalous scarlatina eruption (*'Arch. f. Kinderheilk.,'* 1913, lxii, *p.* 79).—**J. A. Schabad** reports 3 cases of scarlet fever in children, aged 10, 3, and 7 years respectively, in whom the eruption was manifested merely by a swelling of the skin follicles, resembling "goose skin," without any reddening of the skin. In the first case no desquamation was noticed, in the second the desquamation was general and well-marked, and in the third it was slight. J. D. Rolleston.

Scarlet fever in the aged (*'Edinburgh Med. Journ.,'* 1913, xi, *p.* 492).—**C. B. Ker** records a case in a man, aged 74 years, complicated by otititis and arthritis. Desquamation was typical. Recovery took place. In a total of 263,986 cases treated in modern fever hospitals, Ker could find only twenty in persons above 60, and of these only two were definitely stated to be 70 years and upwards. J. D. Rolleston.

Second attacks of scarlet fever (*'Arch. de Méd. des Enf.,'* 1914, xvii, *p.* 267).—**G. Jacobson.**—Four children of the same family, aged 7, 8, 9 and 10 years respectively, had a second attack of scarlet fever. In every case the second attack was worse than the first, which in one had occurred four years and in the other three one year previously. The child, aged 8 years, died and the rest had various complications.

J. D. Rolleston.

Bradycardia in scarlet fever (*'Bull. et mém. Soc. méd. des Hôp. de Paris,'* 1914, xxxvii, *p.* 614).—**Monier-Vinard** and **Meaux-Saint-Marc** examined the cardiac rhythm of 270 scarlet fever patients and found bradycardia in 165. It was present only in the moderate and mild cases, tachycardia being invariable in the severe. It was observed during the decline of the eruption, rarely at the time of its appearance. Of the 165 cases 136 were adolescents or adults and 29 children under twelve years. Bradycardia was much less common in children, in whom it occurred in 31·5 per cent., than in adults, in which its frequency was 76·4 per cent. In children tachycardia was the rule during the febrile period, bradycardia occurring only after the fall of the temperature. The average bradycardia pulse-rate was 64 in the child and 56 in the adult. In only 4 children did the pulse-rate sink to 58 or 56. The duration of bradycardia was also less in the child than in the adult. The bradycardia of scarlet fever, like that of mumps (*v.* British Journal of Children's Diseases, 1913, x, p. 282) and other acute infec-

tions, is a nervous bradycardia, and indicates an exaggeration of the inhibitory action of the vagus. It is transitory, unstable, and irregular and liable to be modified by a number of influences. It is a good prognostic, in striking contrast with the tachycardia due to paralysis of the vagus which occurs in severe and malignant scarlet fever. J. D. Rolleston.

Functional test (phenol-sulphonephthalein) of the kidney in scarlet fever (*'Journ. Amer. Med. Assoc.,'* 1913, lxi, *p.* 1368).—**M. Fishbein** reports some cases of scarlet fever in which the renal function was tested by intramuscular injection of phenol-sulphonephthalein. In normal persons 65 to 85 per cent. of the dye is excreted after two hours. In acute nephritis the activity of the kidneys may fluctuate greatly in twenty-four to forty-eight hours. In parenchymatous nephritis there is a marked decrease in the amount of the drug excreted, and in chronic interstitial nephritis a low output is found in all cases. The writer found that in scarlet fever there seems to be a general lowering of the renal function during the later stages of the disease, as in nearly all uncomplicated cases examined from the third to the fifth week the total output only averaged 55 per cent. In the instances of acute nephritis an increased output was observed in two, and a lowered in one. In several instances in which headache and nausea occurred, although no albumin was found in the urine, the test showed a decreased function of the kidneys. The practical value of the test as an aid to treatment in this disease is apparent. T. R. Whipham.

Familial disposition for scarlatinal nephritis (*'Jahrb. f. Kinderheilk.,'* 1914, lxxix, *p.* 438).—**R. Bode,** in a study of 3,500 scarlet fever patients, found that 190 cases of nephritis occurred among several members of 89 families, while 114 isolated cases of nephritis occurred among 271 families. He therefore agrees with Mathies (*v.* British Journal of Children's Diseases, 1914, xi, *p.* 36), in a belief in a familial disposition to nephritis in scarlet fever; but, unlike Tuch, he does not regard the kidneys in such cases as a *locus minoris resistentiæ*, nor like Spieler maintain an hereditary renal debility. He merely thinks that blood relations react in a similar manner to the same infective or toxic agent.

J. D. Rolleston.

Chronic Scarlatinal nephritis (*' Thèses de Paris,'* 1913–14, *No.* 192). —**R. Gerschenovitsch.**—Scarlatinal nephritis may terminate by death, complete recovery, or by passage into a chronic stage. The latter may occur in one of three ways. (1) The symptoms become attenuated, but do not disappear. (2) All the symptoms disappear except albuminuria, which persists with or without casts. (3) Recovery is apparent rather than real, for after a certain time the process, hitherto quiescent, becomes active and evolves like Bright's disease. Of thirty-seven cases collected by the writer, eight belong to the first group, eighteen to the second, and eleven to the third. In other words, one-half the cases run their course without retention phenomena with simple albuminuria, while the other half are accompanied by symptoms of azotæmia or chloruria. Fifteen of the thirty-seven cases dated from attacks of scarlet fever between the ages of 3 and 15 years. The thesis ends with the dictum of Talamon and Lecorché: "Scarlatina is to the kidney what acute articular rheumatism is to the heart." J. D. Rolleston.

The influence of scarlet fever on Wassermann's reaction (*'Jahrb. f. Kinderheilk.,'* 1914, lxxix, *p.* 215).—**B. Jacobovics** made 178 examina-

tions of the serum of 55 patients in the Budapesth Children's Hospital, and in 37 specimens obtained from 18 patients got positive results. In 16 patients the positive reaction was first obtained after subsidence of the acute symptoms, *i.e.* from the twentieth to the twenty-third day of disease—a result similar to that obtained by Much and Eichelberg, Halberstædter, and Much and Reiche. Syphilis, congenital or acquired, could be excluded, because, apart from a negative history and absence of clinical signs, the reaction was always negative both before and after the positive phase. The earliest date at which the reaction becomes negative was the thirty-fifth day of disease, and the latest the forty-eighth. In 83 per cent. there was more or less extensive necrosis in the throat. J. D. Rolleston.

Osteitis of the frontal bone in scarlet fever (*'Thèses de Paris,'* 1913–14, *No.* 125).—**A. Gilles.**—A boy aged 10 years developed osteitis of the frontal bone on the twenty-fifth day of scarlet fever. The temperature, which had been normal for nearly a week, rose again, but rapidly subsided when the abscess was opened. Examination of the pus showed streptococci. A fistula leading down to the frontal bone was still present nearly three months after the operation. The thesis contains the histories of other bone and joint complications of scarlet fever recorded in recent literature.

J. D. Rolleston.

The diagnostic significance of Döhle's inclusion bodies in scarlet fever, measles, diphtheria, tonsillitis and serum rashes (*'Arch. f. Kinderheilk.,'* 1914, lxii, *p.* 321).—**S. N. Rosanoff** examined the blood of 325 scarlet fever patients, and 321 controls viz. 156 cases of measles, 144 of diphtheria, 17 of tonsillitis, 14 of serum rashes, and 20 healthy persons. His conclusions were as follows: (1) Scarlet fever cannot be diagnosed on the strength of a single blood smear containing inclusion bodies, since similar bodies are found in measles, diphtheria and some forms of tonsillitis. (2) As the inclusion bodies are always present during the first few days of the disease, their absence during this period is strong evidence against scarlet fever, except in cases of scarlatina fulminans. (3) Their value in the early diagnosis of scarlet fever is diminished by the fact that they are found with difficulty during the first few hours of the disease, especially in mild cases. (4) A strong reaction indicates a severe attack. (5) The presence of inclusion bodies in measles and diphtheria patients suspected to have contracted scarlet fever does not settle the diagnosis during the first five days of the disease, but if the bodies are present later they confirm the existence of scarlet fever. (6) Their presence in tonsillitis, except cases of quinsy, should suggest scarlet fever. (7) The finding of inclusion bodies allows one to distinguish scarlet fever from scarlatiniform eruptions provided that the latter have appeared five days after the onset of the original disease, *i. e.*, diphtheria. J. D. Rolleston.

Measles in a new-born child (*'Deutsch. med. Woch.,'* 1914, lx, *p.* 441).—**E. Steinschneider** during an epidemic of measles saw a child aged 9 days, with conjunctivitis, photophobia, Koplik's spots and a typical measles eruption. Temperature 102·4. Recovery took place. J. D. Rolleston.

Mortality in measles, especially in early childhood (*'Le Nourrisson,'* 1914, ii, *p.* 25).—**S. Chauvet.**—From May 13 to June 12, 120 measles cases were admitted to Marfan's measles block at the Hôpital des Enfants malades.

Forty-six died, a mortality of 37·5 per cent. Of these 16 were in the first year of life, 23 in the second, 2 in the third, 2 in the fourth, 1 in the fifth, and 1 in the tenth year. Three deaths were due to severe diarrhœa on the seventh, thirteenth, and sixteenth day of the eruption, 1 was due to inflammation of the arm, 1 to diphtheria, and 41 to broncho-pneumonia. One of the cases was in the incubation stage of scarlet fever on admission, and 23 children were subsequently infected. Two-thirds of the children developed otitis, usually in both ears. Of cases admitted in error to the block and discharged after one or two days' stay, 15 subsequently developed measles, and 2 died of broncho-pneumonia. The high rate of mortality and complications is attributed to overcrowding and the absence of individual isolation which has given such good results at the Pasteur, Saint Joseph, and Hérold hospitals. J. D. Rolleston.

Interstitial and subcutaneous emphysema in measles (*'Zentralbl. f. Kinderheilk.,'* 1913, xvii, *p.* 487).—**T. Piske** records three cases in children aged 1, 5 and 6 years, who, at the height of the measles eruption, suddenly developed dyspnœa, restlessness and subcutaneous emphysema. The dyspnœa was not accounted for by the signs in the lungs, and no remarkably severe attacks of coughing had been noticed. In the child, aged 5 years, who died, the presence of deposit on the tonsils, in addition to dyspnœa, at first suggested diphtheria. The necropsy showed purulent bronchitis, broncho-pneumonic areas in both lungs, and interstitial emphysema. As regards treatment, the coughing should be checked by pantopon or codeine, and by injections of morphine (*cf.* British Journal of Children's Diseases, 1910, vii, *p.* 411). J. D. Rolleston.

Gangrene in the lower limbs following acute arteritis in measles (*' Arch. de Méd. des Enf.,'* 1914, xvii, *p.* 42).—**Galop** records a case which occurred in a female infant, aged 19 months, shortly after the onset of measles complicated by broncho-pneumonia. Dry gangrene involved the whole of the right foot and part of the leg. No pulsation was felt in the popliteal artery. There was also paresis of the right upper limb which was attributed to embolism as the heart was enlarged and presented a loud murmur. Amputation was performed, but the stump became gangrenous and the child was removed from hospital moribund. J. D. Rolleston.

Koplik's spots occurring on the tonsils of a child anaphylactic to egg-albumen (*'Johns Hopkins Hosp. Bull.,'* 1914, xxv, *p.* 78).—**S. R. Miller.**—A girl, aged 10 months, shortly after taking egg-white for the first time, became restless, fretful, and dyspnœic, with a temperature of 103·5° F. The throat showed no membrane, but on each tonsil there were about twenty-five bluish-white bodies exactly like Koplik's spots. Relief of symptoms followed a hot bath, and the rash of measles began to appear. The child's sister had had measles a fortnight previously. Some time later the child showed further signs of anaphylaxis to egg-albumen. About half an hour after taking egg-white and orange juice she had laryngeal distress, a temperature of 103°, and a general urticaria. Von Pirquet's test with egg-albumen was subsequently performed, and produced a marked local reaction with mild constitutional disturbance. J. D. Rolleston.

Otitis and smallpox (*'Giorn. internaz. d. Sci. Med.,'* 1914, xxxvi, *p.* 269).—**C. Verso.**—Otitis in smallpox is so rare that it may be regarded as a coincidence. Of 2147 cases admitted to the Cotugno hospital in Naples from

1908 to 1911, only 9 developed ear trouble, which was either unilateral or bilateral otitis media. None had any mastoid or internal ear manifestations. Five of the patients were children aged from $2\frac{1}{2}$ to 11 years.

J. D. Rolleston.

Smallpox of fœtus in the fourth month (*'Austral. Med. Gaz.,'* 1914, xxxv, *p.* 3).—**C. Hall.**—The mother developed a mild attack of smallpox on October 17 when she was three months pregnant. On November 12 she had abdominal pain and nausea, and on the 17th was delivered of a fœtus which showed numerous oval or circular areas of cicatricial appearance scattered over the skin. No vesicles nor crusts were present. The lesions were most numerous on the face, scalp and neck, but there were many on the body and arms and some on the wrists, palms and soles. Hall thinks that the fœtus must have developed the disease at the same time as the mother, *i. e.* at the third month and had died a month later. As the parents were healthy and free from syphilis the death of the fœtus must have been due to smallpox.

J. D. Rolleston.

Erysipelas in the new-born (*'Thèses de Paris,'* 1913-14, *No.* 131).—**L. Delhoume.**—This is a rare affection, only thirty-eight cases, of which thirty-four were fatal, having occurred at the Clinique Tarnier within the last twelve years. Apart from prophylaxis, the various modes of treatment hitherto employed have no truly specific action. Polystreptococcic serum should be used by choice. As the prognosis seems to be improved by the appearance of multiple suppuration, Delhoume suggests fixation abscesses as a method of treatment. The thesis contains the histories of seven fatal cases and of seven who recovered after the occurrence of multiple suppuration.

J. D. Rolleston.

Complications of typhoid fever in childhood (*'Osp. dei Bamb. di Milano,'* 1913, ii, *Nos.* 11, 12).—**C. Monti-Guarnieri** reviews the literature and gives brief notes of twenty cases in children, aged from 3 to 8 years. He classifies the complications as follows: (*a*) Complications due to typhoid fever alone: bronchitis and broncho-pneumonia, endocarditis, cystitis and nephritis, meningeal and meningo-cortical reaction, catarrhal jaundice, herpes and infective purpura. (*b*) Complications due to associated secondary infections. (1) Pyogenic organisms causing pyodermia, otitis, exfoliative dermatitis and bedsores. (2) Pyogenic organisms and normal microbial flora of mouth causing pultaceous or ulcerative stomatitis. (3) Strepto-diphtheria symbiosis giving rise to ulcero-membranous angina (4) Tuberculosis.

J. D. Rolleston.

Typhoid and paratyphoid fever in infants (*'Thèses de Paris,'* 1913–14, *No.* 102).—**E. L. Maignou** records two cases of typhoid fever in infants, aged 2 and 19 months respectively, and one of paratyphoid in a baby of 2 months. All made an uncomplicated recovery after two or three weeks' illness. In the paratyphoid cases the milk bottles were not boiled, but were washed with water obtained from a well belonging to a house in which there were two cases of typhoid fever. Reference is made to the cases reported by Achard (*v.* British Journal of Children's Diseases, 1911, viii, *p.* 18, and 1912, ix, *p.* 38) and by Crozer Griffith (*ibid.*, 1913, x, *p.* 372).

J. D. Rolleston.

Paratyphoid fever in a breast-fed child (*'Monatsschr. f. Kinderheilk.,'* 1913, XII, *p.* 80).—**K. Blühdorn.**—An infant aged 12 weeks was admitted to hospital with high fever and frequent loose stools, vomiting subsequently occurred, and there was marked prostration. Paratyphoid B bacilli were found in the stools. Rapid recovery took place after washing out the stomach and intestine. Three days before this child's illness the mother and her other three children, aged 4, 5 and 6, had been taken ill, after eating a sausage, with fever, vomiting and diarrhœa. No bacteriological examination had been made in their case. As the infant had not eaten any of the sausage and transmission by the milk was improbable, the infection must have taken place by contact. J. D. ROLLESTON.

Some tragic aspects of whooping-cough (*'Boston Med. and Surg. Journ.,'* 1914, CLXX, *p.* 406).—**P. H. Sylvester** records eight cases in children, aged from 16 months to 6½ years, seven of whom died in from ten to forty-eight hours of the first convulsion, which came on within the second to fifth week of the paroxysmal stage. All had a very high temperature and an increased amount of normal sterile spinal fluid. The surviving case was left an imbecile. J. D. ROLLESTON.

A case of rabies (*'Arch of Ped.,'* 1914, XXXI, *p.* 9).—**A. Hand** reports a second case of rabies which has come under his observation within three years. The patient was a boy, aged 9 years, who was severely bitten in the face by a dog. The wounds were treated with pure carbolic acid and alcohol, but difficulty in swallowing followed during the night. The parents persistently refused to sanction the Pasteur treatment, and five and a half weeks later the boy had headache and pain in the throat, and had a sudden convulsion during which he felt as if he would die. A hypodermic injection of morphia was given at the hospital, but he rapidly became extremely restless, with a flushed face, widely dilated pupils, and the characteristic hunted expression of rabies. Spasm of the pharynx caused the saliva, which was copious in amount, to be ejected from the mouth, and water, which was asked for, was unable to be drunk. The temperature was 106° F., and the pulse-rate 200. Convulsive movements with opisthotonos occurred, and the boy died the same evening. Necropsy was objected to for three days, but finally the brain was obtained, and Negri bodies were found in one ganglion cell. Rabbits inoculated with an emulsion of this material showed Negri bodies in large numbers in the hippocampus. The diagnosis was thus established. [The author's first case was abstracted in the BRITISH JOURNAL OF CHILDREN'S DISEASES, 1913, X, p. 374.] T. R. WHIPHAM.

A case of rabies treated with neo-salvarsan and quinine (*'Journ. Amer. Med. Assoc.,'* 1914, LXII, *p.* 204).—**M. B. Wesson.**—A Mexican, aged 10 years, was bitten on July 10, 1913, by a rabid dog, the left forearm and throat being badly lacerated. The wounds were cauterised, and dressed daily. Pasteur treatment was persistently urged, but refused. About August 2 the boy became depressed and anxious. There were cephalalgia, loss of appetite accompanied by gastric uneasiness and nausea. The patient's mental condition gradually grew worse, and at times he was intermittently delirious. On the morning of August 6 the wounds were healed, but the scars appeared abnormally livid. The patient was restless, breathing was rasping, and was frequently interrupted by pharyngeal and respiratory spasms;

there was a slight dysphagia. A general hyperæsthesia was present, with photophobia and intolerance to sound. The eyes reacted to light and accommodation; tendon and skin reflexes were slightly exaggerated; the grip of the left hand was much weaker than that of the right, and when the boy attempted to walk the left leg had a tendency to give way. Following the method of Tonin—who in July, 1912, reported a "hopeless" case of rabies in a child, aged 13 years, cured following the use of 0·3 grm. of salvarsan, potassium iodide, tepid baths and stimulants—the patient on admission to the hospital was given 0·4 grm. neo-salvarsan (intra-venously), repeated in twenty-four hours. On this day Moon's report of rabies cured in dogs with quinine by mouth was received; so the patient was given quinine sulphate by mouth (106 gr. per diem, divided into three doses), and this was continued up to within a few hours of the end. During the course of his illness the temperature ranged from 100·2° F. to 106·2° F., and pulse from 138 to 170. Forty hours before death he was unable to swallow thick liquids, but he could swallow water up to within four hours of his death, though with great difficulty, suffocating pharyngeal spasms occurring after a few swallows. The patient never became violent. Paralysis became general, and death took place, on the second day, from asphyxia during a slight paroxysm. In this case neo-salvarsan, quinine, and other drugs had no influence in checking the advance of the disease or modifying its course in any way, other than possibly controlling convulsions. T. R. Whipham.

Acute infectious jaundice in children (*'Med. Record,'* 1913, lxxxiv, *p.* 260).—**C. Herrman** emphasises the fact that in children many cases of jaundice are due to an acute infection and not to dietetic errors. He has studied ninety-eight cases. The seasonal incidence shows a marked prevalence in October, November, and December, over one half of the cases occurring during those three months. No case was met with in a child under twelve months of age, and only two cases under two years. The commonest age for the malady was between the ages of three and six years. The bacteriology of the disease is not settled. Amongst the symptoms abdominal pain and prolonged loss of appetite are not conspicuous. The temperature is usually raised, but not to a high figure. The pulse is not slow. The jaundice, if deep, may cause itching. The liver was enlarged in a considerable majority of the cases; the spleen was palpable in a minority. In the series of ninety-eight cases there was only one death. In this case the clinical picture was that of "Weil's disease," but the case differed from the others in no particular, save in severity. No post-mortem examination was made. For treatment the author recommends soup, lean meat, vegetables, skimmed milk, and bread, and lays particular stress upon the advisability of frequent meals, five or six in the day in order to stimulate the passage of bile into the duodenum. The character of the food is of secondary importance. Reginald Miller.

Noma following infectious disease (*'Giorn. internaz. di. Sci. med.,'* 1914, xxxvi, *p.* 193).—**A. Montefusco** records two cases in boys aged 4 years. One occurred at the end of the first week of severe typhoid fever and was cured by an injection of 0·25 arseno-benzol. The other, following diphtheria and measles, was fatal in spite of two injections of arseno-benzol. Both received injections of diphtheria antitoxin without any effect on the noma.
J. D. Rolleston.

Changes of the infantile ovary in infectious diseases (*'Osp. d. Bamb. d. Milan.,'* 1913, II, *No.* 1).—**P. Sessa** examined the ovaries of seventeen children aged from 10 months to 5 years, ten of whom had died from acute infections, such as scarlet fever, diphtheria, measles, or whooping cough, and seven from chronic infections, especially tuberculosis. In the acute infections he found acute parenchymatous inflammation, which was most marked in the cortex, while in the chronic infections there was a chronic interstitial oöphoritis. In life there had been no appreciable clinical signs suggestive of these organs being affected. Sessa suggests that many obscure cases of sterility in women are due to some severe infection n childhood. J. D. ROLLESTON.

Dermatology and Syphilis.

Roseola infantum (*'Journ. Amer. Med. Assoc.,'* 1913, LXI, *p.* 1446).—**J. Zahorsky** considers that, although the term "roseola infantilis" of older writers has dropped out, there is a definite syndrome to which the name can be applied. It consists of a prodromal fever ranging from 102° F. to 105° F. and continuous, with moderate morning remissions. There is extreme restlessness at night and drowsiness during the day. The fever falls by crisis within a few hours after the appearance of the eruption, but in some cases a few hours before. The eruption is rose-red, and macular or maculo-papular, and appears in a circular or elliptical manner. It is most marked on the trunk, less so on the face. The back, buttocks, and thighs are generally well covered, but occasionally the lesions may be very sparse and limited to the trunk. There is no concentric arrangement, and the rash is usually not raised much above the skin. There are no catarrhal symptoms except congestion of the fauces. A macular exanthem is sometimes seen on the palate on the day preceding or coincident with the eruption. Koplik's spots are absent. Slight redness of the conjunctiva is occasionally observed. Vomiting and diarrhœa occur in a few instances. The cervical glands are slightly enlarged in most cases, and there is no desquamation. The disease occurs in infants under $2\frac{1}{2}$ years of age, and is not contagious. The active cause is not known, but an intestinal intoxication is possible. The only exanthem for which the condition is apt to be mistaken is rubella, but the features of roseola are distinct. The author gives a brief report of thirty-three cases. T. R. WHIPHAM.

Infantile eczema (*'Med. Record,'* 1913, LXXXIV, *p.* 942).—**B. F. Ochs** regards auto-toxæmia as the cause of many cases of infantile eczema. Absence of vomiting is characteristic of such cases and therefore should be a guide to treatment. They are best treated by cutting down the amount of food and the number of feedings, and by small and repeated doses of calomel. If after a week's treatment there is no improvement, some other cause must be sought for. J. D. ROLLESTON.

Elephantiasis neuromatosa (*'Edin. Med. Journ.,'* 1913, XI, *p.* 421).—**Norman S. Carmichael** reports three cases of elephantiasis neuromatosa of congenital origin which occurred in a married woman, aged 36 years, and her two little girls, aged respectively $4\frac{1}{2}$ and $2\frac{1}{2}$ years. These patients had not been exposed to filarial infection, and blood examination was negative. Operation was refused. The author briefly reviews other papers on this subject. J. ALLAN.

Multiple tumours of the skin (*'Monatsschr. f. Kinderheilk.,'* 1913, XII, *p.* 443).—**E. Schmid** describes the case of a child, aged 11½ years, in whom numerous yellowish-brown pigmented nodules were found on the buttocks, chest, abdomen and back, and to a less extent on the face and extremities. The diagnosis made was Boeck's sarcoid, which shows itself as tuberous, papular, and diffuse infiltrated forms, the objection to the diagnosis being that some of the nodules were softening and arsenic had no effect.

F. R. B. Atkinson.

Picric acid in the treatment of skin lesions (*'Arch. of Ped.,'* 1913, XXX, *p.* 854).—**H. B. Wilcox** recommends picric acid in aqueous and alcoholic solution or in ointment for its anæsthetic effect, its antiseptic action and its easy application. He obtained the best results in acute eczema, burns, intertrigo, herpes labialis and infected vaccination lesions. The only drawback to the drug is the permanent staining which it causes.

J. D. Rolleston.

The Wassermann reaction in children's diseases (*'Glasg. Med. Journ.,'* 1913, II, *p.* 303).—**H. F. Watson** has carried out the Wassermann test in a large number of cases, from which he has obtained some interesting information. In 100 selected children—those with stigmata, specific history in family (abortions, lesions, etc.), and also all cases in which there was a death in the family, whether it seemed suspicious or not, being rejected—the Wassermann reaction was negative in 100 per cent. In the second place 100 cases were taken at random, and, after the result of the Wassermann was known, their physical condition and family history were investigated. Twenty-nine gave a positive result—twelve showed clinical evidence of syphilis, and seventeen were unsuspected, though of the latter it should be noted that eight were mentally defective. In these seventeen cases, unsuspected from physical examination, evidence of syphilis was found in a parent, brother, or sister by obtaining positive Wassermann reactions, and in most cases several members of the family gave positive results. In sixteen cases of congenital heart disease a positive reaction was obtained in every case. Excluding malformations of the heart, patent foramen ovale, etc., congenital heart disease has in the past been regarded as rheumatic endocarditis during fœtal life. If the results of the Wassermann reaction are reliable, then clinical and pathological teaching will sooner or later fall into line with the facts found. The author believes that "congenital heart disease" includes at least two distinct conditions—(*a*) true congenital heart disease; (*b*) an infantile type. In the former condition the illness is, in most instances, observed as soon as the child is born. There is a definite specific history, and the child shows evidence of syphilis. The disease is progressive, and the child dies at a very early age—no doubt, partly because of the severity of the lesion, and partly because vigorous antisyphilitic remedies have not been given. In the infantile form, the child is born of a mother who is the subject of rheumatism, and who has had an attack during pregnancy. At birth the child is anæmic and weakly, and about the end of the first week there appears for the first time clinical evidence of heart disease. This condition is never so severe as the former type, and the child does not die at such an early age, though in most chronic cases the cardiac murmur is even louder than in the syphilitic type. In this condition the Wassermann reaction was negative in every case examined. In fifteen

cases of meningitis with more or less hydrocephalus a positive reaction was obtained in every case. This also is a true congenital condition. The history is positive, there is positive clinical evidence, and the disease is progressive, and death results before the end of the third year. J. Allan.

The importance of the Wassermann reaction in infant welfare (*'Prag. Med. Woch.,'* 1913, xxxviii, *p.* 621).—**Epstein** regards it as most important that all infants received into public institutions should be tested by Wassermann's reaction. It is essential, in the interests of child and attendants, that unknown foundlings should be so examined. The Bohemian Parliament has, by a recent order, made the examination obligatory. Between May, 1912, and October, 1913, 3691 tests have been made—2299 on children, 1392 on mothers. It is advisable to test the blood both of mother and child. The final results have not yet been worked through, but these were the results of one period. Among 198 mothers 20 gave a positive reaction; of these 20 there were signs of old or recent syphilis in 5. Among 236 children tested in the first week of life 8 were positive; in 5 of these the mothers had signs of syphilis, in 1 the mother's reaction was negative, in 3 the mothers had not been tested. One child who gave a negative reaction subsequently showed signs of syphilis; a second test was then positive.

M. D. Eder.

The importance of the Wassermann reaction from a prognostic as well as a diagnostic standpoint (*'Arch. of Ped,'* 1913, xxx, *p.* 747.). **W. P. Lucas** draws attention to the importance of examining the parents' blood in cases of congenital syphilis. He describes four groups of cases: (1) When the reaction is positive in both mother and child, the latter always has active syphilis; (2) When the reaction is negative in mother and child, the latter often shows atrophy, or malnutrition, and in these cases the paternal blood is always positive; (3) When the reaction is positive in the mother and negative in the child, the latter may show any parasyphilitic manifestations; (4) When the mother's reaction is negative and the child's positive, active syphilis is present. As regards the prognostic value of the reaction, when this is positive in mother and child the prognosis is bad, and the child should be breast-fed. In the author's cases 70 per cent. of the mothers gave a positive reaction when there was active syphilis in the children, and 44 per cent. of these died in the first year. None of these were entirely breast-fed, while the 55 per cent. which survived were mainly breast-fed. When the mother's reaction is negative the prognosis is more favourable for the child. C. F. Marshall.

Congenital syphilis twenty years after the mother's infection (*'Hospitalstidende,'* 1914, lvii, *p.* 143).—**H. Boas.** Between December, 1891, and January, 1892, the mother had had fifty mercurial inunctions for syphilis. In the next twenty years she had twelve deliveries, resulting in four healthy children, with negative Wassermann reactions, and eight miscarriages or deaths from syphilis shortly after birth. The child born in 1912 was healthy at birth, but one and a half months later developed a profuse nasal discharge and gave a positive Wassermann reaction. In spite of treatment with calomel, death took place from broncho-pneumonia. The necropsy showed a typical syphilitic flint liver, syphilitic sclerosis of the pancreas, and syphilitic osteochondritis. Spirochætes were found in sections

of the liver. The mother showed no signs of syphilis, but gave a positive Wassermann reaction. Re-infection in her case could be excluded, and her husband was quite healthy. J. D. Rolleston.

Unilateral Hutchinson's tooth (*'Ann. de Derm. et de Syph.,'* 1914, 5 *sér.*, v, *p.* 100).—**C. Audry** records a case in a deaf mute girl, aged 14 years, who had been cured of interstitial keratitis and cutaneous gummata by salvarsan. All the teeth were normal except the left upper central incisor, which was obliquely implanted and shorter than its fellow. The free border was uneven, but it did not show the characteristic notch.

J. D. Rolleston.

Hepato-splenomegaly with ascites attributed to late heredo-syphilis (*'L'Echo Méd. du Nord,'* 1913, xvii, *p.* 310).—**E. Duhot** and **H. Leroy** report the case of a young man, aged 21 years, with enlargement of the liver and spleen and ascites. History negative, and nothing pointing to hereditary syphilis, except possibly the rudimentary conditions of the genital organs. Wassermann reaction positive in blood and in ascitic fluid. On these grounds the case was diagnosed as one of late heredo-syphilis. Treatment had little effect and the ascites continued to recur.

C. F. Marshall.

Glycosuria in congenital syphilis (*'Urolog. and Cutan. Rev.,'* 1914, xviii, *p.* 13).—**G. H. Day.**—The patient was a girl, aged 10 years, with congenital absence of the right hand, who for three and a half years had suffered from severe headache, vertigo, loss of weight, and glycosuria. Syphilis was not at first suspected. At the age of ten years she had several epileptiform attacks. Wassermann's reaction was positive and three injections of neo-salvarsan were given. Two weeks after the first injection the epileptiform attacks and headache ceased. The glycosuria diminished perceptibly, and at the end of three weeks the urine was normal.

J. D. Rolleston.

Bronchial dilatations and heredo-syphilis in children (*'Arch. de Méd. des Enf.,'* 1914, xvii, *p.* 105.—**J. Milhit** draws attention to the occurrence of bronchial dilatations in the subjects of congenital syphilis. He reports three cases, aged 10, 12 and 13 years, with evidence of congenital syphilis, a positive Wassermann reaction, and signs of bronchial dilatation. The pulmonary signs disappeared in all cases after mercurial treatment. Dilatation of the bronchi, as previously pointed out by Hutinel, may occur both in infants and in older children, who suffer from congenital syphilis. In some cases it is associated with tubercle.

C. F. Marshall.

Syphilis and congenital heart disease (*'Thèses de Paris,'* 1913-14, *No.* 131).—**A. Mikhailovski.**—Heredo-syphilis is a frequent cause of congenital heart disease, though its importance should not be exaggerated. It acts upon the heart in two ways: (1) by creating inflammatory lesions; (2) by impeding its normal development. There are no clinical forms special to heredo-syphilis, but any cardiac disease may be due to this cause. Syphilitic cardiac disease is only distinguished by dystrophic troubles and

other symptoms of heredo-syphilis. Heredo-syphilitic myocarditis is sometimes seen in the new-born. Gummata of the myocardium may be found in myocarditis in which interstitial or parenchymatous lesions predominate or finally fatty degeneration and cardiac sclerosis. The thesis contains the histories of twenty-four cases, including one hitherto unpublished of pulmonary stenosis in a heredo-syphilitic infant, aged 1½ months.

J. D. Rolleston.

The syphilitic nature of Sydenham's chorea (*'Thèses de Paris,'* 1913–14, *No.* 168).—**E. L. M. Roustan** says that acquired or inherited syphilis is almost constantly to be found in chorea if a careful clinical and serological examination be made. If necessary, Milian's biological reactivation of Wassermann's reaction should be performed. Rheumatism, which is often invoked as a cause, is almost constantly absent in chorea. On the other hand, rheumatoid and osteocopic pains due to inherited syphilis are frequently present. The absence of any infective or toxic cause except syphilis suggests that syphilis is the cause of chorea. This hypothesis is justified by the infective origin of chorea, which is now generally admitted. The existence of familial chorea is also in favour of a syphilitic origin of the disease. The powerful therapeutic action of mercury and arsenic is easily explained if the syphilitic nature of chorea be admitted, and in any case does not accord with the rheumatic origin of the disease. The thesis contains the histories of forty cases, six of which are original (*cf.* British Journal of Children's Diseases, 1914, xi, *pp.* 44, 45).

J. D. Rolleston.

Hydrocephalus and syphilis (*'Gazz. internaz. di Med. Chir. etc.,'* 1913, *p.* 1209).—**S. de Stefano,** in four hydrocephalic children, aged from 2 months to 5 years, found Wassermann's reaction constantly negative both in the serum of the mother and of the child. His results thus agree with those of Knoepfelmacher and Lehndorf and differ from those of Cannata. He concludes that other causes than congenital syphilis enter into the pathogeny of chronic hydrocephalus. J. D. Rolleston.

The cerebro-spinal fluid in old heredo-syphilis (*'Wien. med. Wochens.,'* xliv, *p.* 505).—**H. Przedpelska** examined the cerebro-spinal fluid of ten children aged from six months to thirteen years. All but one were long past the florid stage. Lymphocytosis was found in three cases: (1) A child, aged 6½ months, with a maculopapular rash and rotatory nystagmus; (2) a boy, aged 7 years, with tabes incipiens; (3) a girl, aged 2½ years, with syphilitic endarteritis and hemiplegia. Nonne Apelt's reaction (phase 1) was positive in a case of tabes incipens and one of hemiplegia. Wassermann's reaction in the cerebro-spinal fluid was positive in three cases, two of tabes incipiens, and one of hemiplegia. J. D. Rolleston.

A form of heredo-syphilitic spastic paraplegia in children (*'Arch. f. Kinderheilk.,' Baginsky Festschrift,* 1913, *p.* 468).—**A. B. Marfan** describes a form of paralysis under this title, which is distinct from congenital spastic paraplegia (Little's disease), and also from paraplegia due to Pott's disease of the spine and Strümpell's familial spastic paraplegia. Marfan has observed six cases of this kind. In the first there was no definite evidence of syphilis and no result from antisyphilitic treatment.

In another case the father was syphilitic, and in two others there was interstitial keratitis in the child. In the two last cases there were several signs of heredo-syphilis and a positive Wassermann reaction. The disease begins after the fourth year and is slow in progress. The first sign is difficulty in walking which gradually increases. This is followed by rigidity of the lower limbs. The feet tend to the position of equino-varus. This spastic rigidity disappears when the patient is at rest. The patellar reflex is increased and there is ankle-clonus. The muscles react to faradic and galvanic currents sometimes normally, sometimes a little less. Sensory and trophic disturbances are absent, there is no muscular atrophy and no sphincter troubles. The upper limbs are not affected. A characteristic sign of this disease is the loss of pupil reflex to light, sometimes also to accommodation. Lumbar puncture showed leucocytosis. The Wassermann reaction was positive in both serum and cerebro-spinal fluid. In two cases there was arrested mental development. The above symptoms point to a lesion of the pyramidal tracts of the dorso-lumbar region of the cord. There is no tendency to recovery. Marfan considers this a special type of disease distinct from other heredo-syphilitic affections of the spinal cord which have been described. It more resembles Erb's syphilitic spinal paralysis of adults, but differs from this in the absence of sphincter troubles, and in the constant presence of pupil affection. C. F. Marshall.

Syphilitic diseases of joints and bones in childhood; their differential diagnosis from the medical standpoint (*'Med. Press,'* 1913, II, *p.* 318).—**Sydney A. Owen** draws attention to some of those conditions which the physician may confound with syphilitic bone and joint disease in infancy and childhood. In infants under one year no joint affection, with the rarest possible exception, is due to rheumatism, and at this period of life confusion is most likely to arise in atypical cases of infantile scurvy. In children who have reached the "walking period," attention is drawn especially to (1) the hyperæsthesia, subjective pains, and pseudo-paresis seen not infrequently in fat, rickety children; (2) the acute hyperæsthesia, the toneless, flabby state of the muscles, which may precede for a short time the definite onset of paralysis and loss of deep reflexes in cases of early poliomyelitis. Among the conditions in older children likely to lead to confusion, osteo-arthritis and rheumatoid arthritis, Clutton's symmetrical synovitis, Charcot's joint, joint conditions in hæmophilia, leukæmia, purpura rheumatica, etc., are discussed. The author points to the value of the Wassermann test in doubtful cases. J. Allan.

Treatment of syphilis in the child by salvarsan (*'Arch. de Méd. des Enf.,'* 1913, XVI, *p.* 892).—**A. Galliot** has collected statistics from literature of 145 syphilitic pregnant women treated by salvarsan. They gave birth to 133 healthy children, who were still in good health when seen several months later. Salvarsan is therefore of the highest value in conceptional syphilis, and is to be preferred to any other drug. On the other hand the treatment of heredo-syphilitic infants by salvarsan is to be deprecated, and the classical treatment of mercury is to be preferred. Out of 56 cases collected from literature, death occurred in 14·28 per cent., no result in 21·41 per cent., transient improvement with relapse in 25 per cent., and permanent improvement in 19·28 per cent. The remaining cases had not been followed up long enough to allow any conclusion. Salvarsan is an excellent drug for the

treatment of active lesions in older children. It is also of value in association with mercury in the treatment of dystrophies. The following doses are recommended: At the age of six years one should start with a dose of ·05 neo-salvarsan and increase it to ·10 or ·15 grm., according to the age. From 6 to 10 years, the doses should range from 0·10 to 0·20 grm. Above 10 years the doses may be increased up to 0·30 grm. neo-salvarsan. There should be a series of four or five injections with one injection weekly.

J. D. Rolleston.

Reviews.

Stammering and Cognate Defects of Speech. By C. S. Bluemel. 2 vols. New York: G. E. Stechert & Co. Price 20s. net.

Under this title, the author has given us a treatise on certain disorders of speech, viewed from the point of the psychologist.

The first half of the first volume is devoted to the definition of some of the elementary principles of psychology, and an explanation of the localisation and working of the various cerebral centres concerned in speech. These chapters lead up to a description of the various types of aphasia, which, while containing nothing new, is exceedingly compact, well arranged, and readable, and is, moreover, profusely illustrated by cases selected from well-known authorities.

The second half of the volume is entirely given over to a theory as to the causation of stammering.

Stammering, the author would have us believe, is, in its simplest form, primarily a transient auditory amnesia. In the author's own words, for stammering to occur all that is necessary is that there shall be a temporary auditory amnesia, without kinæsthetic verbal amnesia, in other words, typical stammering is due to the fact that an intact articulatory mechanism permits of the commencement of a word, while temporary failure of the auditory image of that word creates a delay in its continuance.

This auditory amnesia he considers may be either congenital or acquired; and the prevalence of stammering in childhood, he attributes to the unstable character of the various cerebral centres at this age.

In addition to this primary cause, the author recognises secondary or collateral causes, which tend to confirm or perpetuate, and in many instances aggravate the primary simple defect. These he classifies and discusses under the headings of multiple thought and mental confusion, fear and auto-suggestions, and perversion of verbal imagery by false kinæsthetic impressions. The latter would seem to be his explanation of the acquirement of stammering by imitation.

The treatment recommended is, as would be expected, directed towards counteracting these causal factors – improvement of the general health is recognised as of importance – fear and auto-suggestion and subsequent inhibition of will, are to be met by encouragement and an intelligent explanation to the sufferer of the nature of his malady. Multiple thought and mental confusion, the result of the stammerer's attempt to find a

synonym to replace the fatal word over which he stumbles, must be abolished by persuading him always to face his difficulty. Distortion of verbal imagery is to be counteracted by making increased use of conditions under which the patient speaks fluently, *e. g.* reading in unison with someone else. Finally, physical struggles and contortions are to be corrected by ordinary elocutionary methods.

But it is clear that, if the author is correct in his theory of primary causation, there still remains the elimination of the auditory amnesia.

This, we are told, may disappear when the secondary causes, which have helped to perpetuate it, have been removed. If a marked defect of speech remains, *i. e.* if a severe auditory amnesia is present, it is suggested that some means must be found, either to stimulate that centre to fresh activity or to strengthen it or replace it by an increased use of his visual and kinæsthetic imagery. Stimulation of the defective centre appears to be only possible by a studied repetition of difficult sounds and words.

We think it is fair to say that in the treatment advised there is nothing new beyond the suggestion of re-education *viâ* visual and kinæsthetic imagery, and these latter methods hardly appear to us as satisfactory or easily applicable, nor does there appear in the book any proof of its value.

Volume II is occupied with a review and criticism of most of the methods, quack and otherwise, which have at one time or another been advocated as "sure" cures for stammering. This volume might well be published separately as a warning to those unfortunate sufferers of what to avoid. At the end of volume II we have a glossary and bibliography. The former appears to us entirely unnecessary. Its suggested use, namely, to make the book available to the youthful stammerer, is out of the question, in view of the difficult and highly scientific nature of the subject. The bibliography and references generally, however, are invaluable, and show how widely the author has wandered in his effort to thoroughly master his subject.

On the whole we can certainly recommend this work to those interested in disorders of speech, as one containing both original and interesting ideas.

E. B. S.

L'Enfant et son Médecin: Guide pratique de l'hygiène et des maladies de l'enfance. Par le Dr. Albert B. Ball. Deuxième édition. 1914. Paris: A. Maloine. Price 6 fr. 50 c.

This book contains in a condensed form a vast amount of sound and useful information—more than at first sight would appear to be the case. It consists for the most part of accounts in dictionary form of practically all the ills that the child is heir to. Under each disease the ætiology, signs and symptoms, diagnosis, prognosis, and treatment are succinctly, but fully dealt with—indeed, there is no room for a superfluity of words—and the text abounds with cross-references, which are saving of time and very useful. The descriptions on the whole are good and complete, and the treatment comprises the latest methods. So complete is the book in its way that we cannot refrain from making a few suggestions to the author for a future edition. For instance, we should like to have seen separate accounts of such conditions as the myopathies, achondroplasia, and infantilism. The description of cretinism is inadequate. More, it is true, is given under the heading of myxœdema, but to this there is no cross-reference. The account of leukæmia also is somewhat meagre, no details of the blood-changes being

given. Further, we could find no reference to the Mongolian form of diocy.

A noticeable feature of this part of the book is the inclusion of the derivations of the various medical terms, but some laxity is apparent as regards the Greek accents and breathings, and on page 107 there is a misprint.

Further information concerning the child is to be found in the lists of drugs and doses, and in the sections on development and feeding, and on the examination of children. General hygiene is also dealt with, and at the end are lists of institutions and health-resorts, which may be useful for patients going abroad. There is also a very full index.

The book should be of service to the busy practitioner, as much is comprised within a small compass. It is a small octavo, printed on thin paper, and although it contains over 400 pages, it weighs only 6 oz. and is no more than three-eighths of an inch in thickness. T. R. W.

Conférences Pratiques sur l'Alimentation des Nourrissons. Par le Dr. P. Nobécourt, professeur agrégé à la faculté de médecine de Paris, médecin des hôpitaux. Deuxième édition, 1914. Paris: Masson et Cie. Pp. 373 + xxvi. Price 5 fr.

In a previous issue* we have already spoken favourably of this book of lectures on the feeding of infants, and we now welcome a second edition. This consists of a re-issue of the original lectures, with the addition of five new ones on the feeding of delicate and sick children. There are also some additional charts and diagrams. The new lectures contain many useful hints and suggestions and fully maintain the standard of Dr. Nobécourt's previous work.

The book is one which we can recommend to all who are interested in the subject. T. R. W.

Carbon Dioxide Snow: Its Therapeutic Uses (Methods of Collection and Application). By J. Hall-Edwards, L.R.C.P., F.R.S. Edin., Hon. F.R.P.S. London: Simpkin Marshall, 1913. Price 3s. 6d. net.

In this small book of seventy-eight pages, Mr. Hall-Edwards, of Birmingham, has brought together details as to the employment of solid CO_2, originally introduced to the notice of the profession by Dr. Allen Pusey, of Chicago. That solid CO_2 is a useful addition to our means of dealing with various morbid conditions of the skin is undoubted, and owing to its cheapness is within the reach of the majority. Therefore the need of caution in its use is duly noted in the little book before us. That it is of value in certain forms of rodent ulcer has been demonstrated, but that it is a positive cure is quite another matter. Whatever method is employed for rodent ulcer, it is essential that the case should be followed up for recurrences. This holds good for CO_2 as for any other mode. Again, in superficial nævi the results are disappointing, though *à priori* just the reverse was expected by the sanguine. With regard to lupus vulgaris the results do not amount to much, and in scrofulodermia CO_2 makes matters worse. As to lupus erythematosus, types of this condition have to be selected. In some CO_2 is

* British Journal of Children's Diseases, 1912, ix, p. 478.

excellent, but in others the condition may be aggravated. The ensuing pain in lupus erythematosus patches near the scalp may be very great indeed, and last for some time. The danger of CO_2 and its ready application is that it has been, and will continue to be, used rather indiscriminately. The selection of suitable cases for CO_2 is the point which must not be lost sight of. An index would have been useful, and the trade advertisement at the end might well have been left out.

Guy's Hospital Reports. By F. J. Steward, M.S., and H. French, M.D. Vol. lxvii, 1913, pp. 356, 4 plates. J. & A. Churchill. Price to non-subscribers, 10s. 6d.

In addition to a number of interesting papers which have not appeared elsewhere this volume contains a list of the books in the Wills Library written by Guy's men; this has been completed by Mr. Wale and is enriched by biographical notes on the authors. The sympathetic "In Memoriam" of Sir Samuel Wilks by Dr. Hale White is accompanied by a plate of this eminent president of the Royal College of Physicians and by appreciations from Sir Bryan Donkin and Sir George Savage. The third series of neurological studies brought out under Dr. Hertz's supervision contains an account of four cases of cerebellar ataxia in children, and a description of a case of polio-encephalo-myelitis associated with optic neuritis and myocarditis as shown by a transient systolic apex murmur in a girl, aged 12½ years. Dr. Hertz also reports a case of parathyroid insufficiency in a man who, after thyroidectomy, manifested the symptoms of severe Graves's disease except that his eyes were sunken. As treatment with dried parathyroid gland succeeded after everything else had failed, parathyroid insufficiency appears to be the explanation. Dr. Poulton contributes a review on creatinine and creatine, and Dr. Kennaway "Some Notes on the Excretion of Acetone Bodies," in which attention is drawn to the liability of children, especially those between three and four years of age, to show acetonuria after admission to hospital. In his study of 440 cases of inguinal hernia Mr. W. E. Tanner finds that 31 per cent. of the cases were noted at birth and during the first year of life. Drs. Fawcett and Rippmann's valuable statistical article on carcinoma of the gall-bladder associated with gall-stones shows that the symptoms of previous cholelithiasis are usually absent, and from this it follows that though a diagnosis of the gall-stones may justify surgical interference on the ground that inflammatory complications may result, the possibility of carcinoma should not be used as an argument. In a thesis of about 60 pages on parasyphilis of the nervous system, Dr. A. R. Wilson brings forward evidence to show that some cases of primary optic atrophy, primary lateral sclerosis, and progressive muscular atrophy are parasyphilitic.

H. D. R.

The Medical Annual: A Year-book of Treatment and Practitioner's Index, 1914. Thirty-second year. Bristol: John Wright & Son, Ltd. Price 8s. 6d. net.

Owing to the remarkable medical activity of the past year the present volume has been enlarged by the addition of about a hundred pages.

Recent work on children's diseases is ably summarised by Dr. F. Langmead, especially in the articles on infant feeding, and on anæmia, pyelitis,

rheumatism, syphilis, and tuberculosis occurring in children. With the exception of parotitis and pertussis, which are discussed by Dr. Langmead, acute infectious diseases are reviewed by Dr. Goodall.

Other articles of pædiatric interest are those on diseases of the heart by Dr. Carey Coombs, on otitis media by Dr. George L. Richards, on epidemic poliomyelitis by Dr. Purvis Stewart, and on spinal deformities and their treatment by exercise by Mr. Kellett Smith.

It is pleasing to find that ample use has been made, and due acknowledgment given to this JOURNAL's original articles, societies' reports, and abstracts from current literature.

The printing is good and the illustrations, many of which are coloured, are excellent. We have not detected any misprints, but the false concord "eczema syphilitica" (pp. 79 and 597), faithfully copied from the original article, shows that editors, like Homer, may occasionally nod.

An excellent index is prefixed to the volume, but we would suggest that the addition of an authors' index, such as is to be found in every Jahrbuch and Centralblatt, would considerably add to the usefulness of this invaluable work. J. D. R.

REPORT ON AN INQUIRY INTO THE CAUSES OF DEATH IN MEASLES. By H. THURSFIELD, M.D., F.R.C.P. Report of the Medical Officers, 1912–13, Appendix B, No. 2. London: Darling & Son, 1914.

THIS report, which is mainly based on the study of cases treated in the hospitals of the Metropolitan Asylums Board, is divided into three parts. In the first the writer considers the statistical evidence of the causes of death in measles, in the second he describes his bacteriological examinations of thirty-four fatal cases, and in the third he reviews the bacteriological investigations of other observers.

The main conclusions are as follows:

(1) The most frequent cause of death is a septicæmia caused by the *Streptococcus pyogenes*, which causes death towards the middle or end of the second week. In most, but not all, cases there is a well-marked broncho-pneumonia.

(In view of the alleged close relationship between measles and tuberculosis it is noteworthy that in elaborate post-mortem investigations made by Dr. Thursfield on thirty-four cases no evidence of pulmonary or glandular tuberculosis could be discovered, and in another series of twenty-nine cases there was only one instance of gross tuberculous broncho-pneumonia, which was probably present before the measles attack.)

(2) The most probable source of infection with *Streptococcus pyogenes* is a septic condition of the mouth, fauces and naso-pharynx.

(3) Next in importance to *Streptococcus pyogenes* are pneumococcal infections, which usually kill more quickly, causing death at the end of the first or beginning of the second week.

(4) *B. influenzæ* plays a part in the production or prolongation of broncho-pneumonia, which, after septicæmia, is the most frequent cause of death.

(5) Of thirty-one deaths in which bacteriological evidence of disease was found eighteen were due to various forms of septicæmia, and in thirteen the cause of death was broncho-pneumonia. Of three cases in which no bacteriological evidence was obtained one death was due to diarrhœa and two to broncho-pneumonia.

(6) In the nursing of cases with streptococcal infection special care should be taken to prevent transmission to other patients. J. D. R.

Vaccinothérapie dans la Fièvre Typhöide. By Arnold Netter. Paris: Masson et Cie. Pp. 27.

This pamphlet consists of the writer's communications to the Société Médicale des Hôpitaux and the Académie de Médecine in April, May and July, 1913. In addition to an analysis of 1318 cases of typhoid fever recorded by forty different writers, Dr. Netter gives an account of his own experience with Besredka's sensitised vaccine, which he used in twenty children suffering from typhoid fever. His results were very satisfactory. The mortality during the first six months of 1913 sank from 18 per cent. to 7·14 per cent., the duration of the fever after admission to hospital was fourteen instead of twenty-one days, and the percentage of relapses was twenty-three instead of thirty-three. The favourable effects of his injections were also shown by attenuation of symptoms and the prompt disappearance of the typhoid state.

The best results were obtained with doses of 500 millions used for three days in succession. There was very slight local reaction. In one case the injection was followed by symptoms of appendicitis, which subsided in forty-eight hours, and in another by cholecystitis which lasted for a week. Increase in size of the spleen was constant after injection.

J. D. R.

The Great Scourge and How to End it. By Christabel Pankhurst. London: 1913. E. Pankhurst. Price 1s. net.

Miss Pankhurst states that one of the chief objects of this book is to enlighten women as to the true reason why there is opposition to giving them the vote. That reason is "sexual vice." While this is, undeniably, one factor of the opposition in certain quarters, still stronger ones are, the indifference of the great mass of women whom the suffragists have not yet converted, the anxiety of male voters to secure other reforms first, and the fact that no Government sees any political advantage which will accrue to its own party through the enfranchisement of women.

The extracts quoted from Prince Morrow, Marshall and several other writers on syphilis and gonorrhœa will not only enlighten women on the dangers of marriage, but also enable them to understand that a considerable degree of men's injustice to women has been the inevitable result of their own physiological ignorance.

Admittedly the first step towards the prevention of sexual diseases must be open recognition of their extent and significance.

Miss Pankhurst's surprisingly naive assumption that votes for women will, enforcedly or otherwise, necessarily bring about chastity for men shows a very limited knowledge of human nature and the world at large. Sexual problems are complex even in communities otherwise simple or even primitive.

Nevertheless, this courageous and necessary book will undoubtedly help both women and men to realise and deal with their mutual interests and those of the next generation in a scientific and reasonable manner.

L. A. F.

Dental Diseases in relation to Public Health. By J. Sim Wallace, D.Sc., M.D., L.D.S. Formerly Dental Surgeon and Lecturer on Dental Surgery, London Hospital. London. Published at the offices of 'The Dental Record,' Alston House, Newman Street, W. 1914. Price 3s. net.

As is well known, Dr. Sim Wallace is one of the pioneers of the modern dietetic *régime* for children in the prevention of dental caries, and in this small volume he puts forward his views on this subject in a most capable manner. The aim of the book is to bring home to physiologists and others the importance of a knowledge of the physiology of oral hygiene, a subject which, notwithstanding its overwhelming importance at the present day, is altogether neglected in text-books of physiology. The author's views are now receiving more wide-spread acceptance, and we feel sure that before long they will be almost universally held. To all who wish to study the question of dental diseases in relation to diet we can recommend this small book. It is pleasantly written, is full of useful practical information, and ought to be perused by all medical men and dental surgeons. It is particularly suited for those engaged in the work of the medical inspection of school children. J. A.

A Manual of Practical Chemistry. By A. W. Stewart, D.Sc., Assistant Demonstrator of Chemistry at the Royal Institute of Public Health. London: John Bale, Sons & Danielson, Ltd., 89-91, Great Titchfield Street, Oxford Street, W., 1913. Price 3s. 6d. net.

This small volume is intended for the use of students doing D.P.H work. It is divided into six parts which deal respectively with acidimetry and alkalimetry, air analysis, water analysis, analysis of foods and beverages, disinfectants and preservatives, and microscopical work. On the whole the matter given is accurate, but occasionally the directions are not very clear. The book is, in our opinion, inadequate for the requirements of those working for a Public Health Diploma, but as it is interleaved, it can be much amplified by the addition of notes. At the end are given some specimen examination questions. A practical manual such as this would be welcomed by D.P.H. students, and we hope Mr. Stewart will enlarge the volume when a new edition is called for. J. A.